

TO THE RIGHT HONOV

rable John Lumley Knight,

Lord Lumley.



I is three yeares right Honourable, since I first described the celestiaall globe in plano. As soone as it vvas described, I sought vvhath meanes I coulde (being my selfe a poore scholer, and therefore vnable) to bring it to the presse, because as other men iudged, it vvas profitable, and as I ges- sed, it vwould bee pleasurable to the yong stu- dents in Astronomie. Some of great account promised an helping hand, but I vvas so crossed in that helpe, that I vvas faine to giue ouer my sute, and let it lie dead, as it vv ere through dis- paire, minding neuer to attempt the matter a- gain. At length comming in fauour vvith your Honor, through your ovvne good liking, I vvas bolde to craue your helpe herein: My boldnesse vvas not such in crauing, as your readinesse vvas

In helping. For so much that I found no
vway to shewe my thankfulness but onely this,
to let this description of the celestiall globe, vwith
this little treatise belonging thereunto, to ap-
peare vnder your Honours name, I beseech you
to interpret it as a signe thereof, and still to con-
tinue your good vwill begunne, vntill occasion
shall serue me, either by some better deuise
of mine owne, or some seruice inioy-
ned by your honour, to yeeld a
greater argument of my
thankful minde.


Your Honours most humble,

Th. Hood.





TO THE VVORSHIP-
full master Thomas Smith, and
*the rest of the friendly auditours
of the Mathematicall
Lecturer.*

F you maruaile, worshipfull sir,
why in setting foorth this worke,
I should especially name you before
the rest of mine auditours, conside-
ring I haue not done so heretofore,
when I did write vnto them, I
would request you to take this as a reason of my deed.
The Mathematicall lecture by your meanes was first
erected in this Citie, and I by your good liking was
not onely chosen to be the reader thereof: but also in
some part I was mainteyned at your cost. Moreouer
I haue receyued priuile manie, and those especiall
benefites at your hande: All the which iointlie toge-
ther, and seuerally considered one by one, deserved
great thanks. Diuerse times I deuised with my selfe,
howe to recompence your goodwill, but my deuise
could neuer please my minde, as being farre inferiour

To the friendly Auditors

to your desertes. What should I doe? If I still had belde my peace, both you, and others might haue had iust occasion to condemne mine ingratitude. Therefore nowe at the length to auoide suspition of such a vice, I thought it good to acknowledge the good turnes receyued, and to yeelde in worde those thinges, which euer heretofore I haue cōceyued in mind. Furthermore, I am to request you, and the rest of my louing Auditors, friendly to accept my worke, because what soeuer I set foorth, their commoditie is especiallie intended therein. Some one looking on the same, crieth out, hoc aliquid nihil est, this something is nothing, and yet he neuer did so much himselfe. An other protesteth he could haue done as much himselfe: vnto this man I will answere, as a good fellow sometimes answered a Iustice of peace, vpon whose gowne he had spilt a messe of portage. The iustice of peace being offended with the deed, said, Good fellow, I could haue done so much my selfe: Yea marie sir, quoth the fellow, replying merilie, it is an easie matter to doe the thing which you haue seene me doe before you: but when he attempteth to do the like, I thinke he will like the better of me. The third man sweareth there is no more in this worke then is in Ptolomie: What then? if there be as much, I hope it is somewhat, and being so much it is not to be misliked: Tet if it please him to view it well, he shall find somewhat, if not much more.

But

of the Mathematicall lecturer.

But to let these busie bodies passe, I craue once againe
most friendlie Auditours, your good worde, which
shall mak me the more able, and willing to beare the
detraction of other men. In the Hemisphere I haue
intribed the starres, and drawne the constellations
with mine owne hand, because I would be sure to haue
them rightly placed: and in that respect, if in the fi-
gures euery thing be not so exquisit, as you wold wish,
excuse the matter, because they were drawne by a schol-
ler and not by a painter. What commoditie this worke
may yeeld, this booke will declare, and hereafter

God willing in my lectures I will make the
matter so plaine, that you shall find the
Hemispheres so commodious for
your vse, considering they be
more portable, as the
globe it selfe.

Yours Thomas

Hooke.

In the first place, we must observe, that the
 derivation of our name, is the subject of a
 recorded the first, and whence the derivation
 of the name of the place, is not to be
 them rightly placed: and in this respect, it
 gives everything be not so explicit as our old
 even the matter, because they were a
 for and not by accident. It is common to
 many words, this book will declare, and explain

God willing in my old age

... and the ... of ...

[illegible]

John A. Campbell

1801

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THE VSE OF THE CE-
LESTIAL GLOBE IN PLA-
NO, SET FORTH IN TWO
HEMISPHERES.



Choler. Sir, I haue seene
your Celestiall Globe in
Plans, described in two He-
mispheres, the North, and
the South. I would it were
as easie for mee to under-
stande and vse, as I coulde
with it were, so should you
be rid of a trouble: but see-
ing that it is not, I am to
crave your helpe in explai-
ning the same.

Master. You know that it is but late since the Mathema-
ticall Sciences began to be in request within this Citie, so
that euery thing touching those Sciences, cannot be as yet
familiar, and readie to euerie one: but seeing it hath pleased
God to make me a meanes to set forth those studies, I will
doe mine endeouour to lay them forth as plainly as I can:
Therefore not to make many words, we will set downe some
order for our better proceeding, lest in keeping no method,
we runne too far at randon, and your vnderstanding be ra-
ther confounded then furthered.

Scho. We thinketh it were good (if you like well of it) to
follow this order. First, to speake of the Geometricall part:
Secondly, of the Astronomicall part of your Hemispheres. By

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the Geometrical part. I meane the lines: By the Astronomical part, I vnderstand the Starres, and whatsoever concerneth them: as their names, nature, constellations, &c.

Ma. I like your method well, and therefore I will keepe it, endeavouring my selfe to teach you: first, what the lines are: secondly, what vse they haue. But first tell me this: Can you distinguish the North Hemisphere from the South?

Scho. Yes that I can, by the figures of the lesser & greater Beare: For I haue heard you say, that by reason of those figures, the North Pole is called the Pole arcticke. Whereouer, in the North Hemisphere, these wordes, Polus arcticus, are written hard by the tayle of the little Beare.

Ma. Let vs now come to the matter: The lines contained in each Hemisphere, are either right, or crooked: Both these kindes of lines doe represent certaine circles of the Globe.

Scho. You know the small circles of the Globe are counted tenne: As the Equinoctiall, the Eclipticke, the 2 colures, the Meridian, the Horizon, the two Tropicks, the Circle Arcticke, and the circle Antarcticke: Are al these expressed in your Hemispheres?

Ma. No: for the Meridian and the Horizon are without the Globe, and therefore could not conueniently be printed in that worke: but hereafter I will instruct you so, that you shall be able to applie those circles vnto it.

Scho. What doe the right lines represent?

Ma. They in each Hemisphere represent the circles of Longitude.

Scho. What call you the point from whence they are drawn?

Ma. It is the Pole of the Eclipticke, and the Circle wherein they ende, is the Eclipticke.

Scho. Why did you describe these Hemispheres vpon the Poles of the Eclipticke, rather then vpon the Poles of the world: as the Globe is described, and as the heauen mooueth?

Ma. My reason was this: In the booke of the vse of the Cele-

Globe in Plano.

celestiall globe, which I read publikely the last yeare, there are five principall propositions set downe, namely, the 7. 38. 39. 42. and 43. The 7. 42. and the 43. proposition concerning the ascention, culmination & the comming of any starre to the meridian with this or that degree of the ecliptike, are most easie to bee perfourmed by the celestiall Globe: because the Globe hanging vpon the poles of the worlde, the meridian thereby was made a convenient instrument for suche a purpose: but the 38. and 39. propositions which teach vs howe to finde the longitude and latitude of the starres, are hardly wrought vpon the Globe: First, because vsually, especially in the litle Globes, there wanteth a fit instrument to find them out: and secondlie, although there were one, yet could it not well be vsed, in that the Globe being made fast to the poles of the worlde, will not admit a readie vse thereof, nay it will not admit anie vse at all in those starres which are either in, or neare to the Solstitiall colure: which difficultie and trouble being considered, I thought good to helpe that matter, and therefore I projected my Hemispheres so, that that which was hardly to bee perfourmed on the Globe, might on them most easilie be dispatched: for this I can certifie you, that the longitude and latitude of any starre may be found vpon them most readilie.

Sch. You say that the right lines be the circles of longitude: what vse haue they?

Ma. They diuide the ecliptike into 12. partes, whereof each part is called a signe: and what starre soeuer is betweene those lines, is said to be in that signe whose name is set downe betweene the lines in the vttermost limbe of each Hemisphere, and what starre soeuer is precisely vnder anie of those lines, is said to haue such a longitude as the number expresseth, which is at the ende of the line.

Sch. Are there no more circles of longitude, then there are lines expresse in the Hemisphere?

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Ma. You must imagine that through euerie degree of the ecliptike, and through euerie point thereof, there passeth a line of longitude, which if they had bene all expressed, would haue greatly defaced the worke.

Sch. How shall those that are wanting be supplied: and how shall I finde the longitude of all those starres which are not precisely vnder some one of these lines?

Ma. Fasten a silke threed to the Center of each Hemisphere, and vpon the threed put a small bead which maie ride vp and downe the threed at your pleasure.

Sch. How shall I vse the threed?

Ma. You must note this, that either you make choise of some starre, and would finde out the longitude, or else you know the longitude, and would finde out the starre. If you chuse the starre in either of the Hemispheres, & would finde out the longitude thereof, stretch forth the threed ouer the star vntill it touch the vttermost circle of the Hemisphere, so shall you finde out the longitude of the starre propounded, according to the degree vppon which the threed lieth.

Sch. But there are three circles distinguished into degrees, in which of them must the longitude be taken?

Ma. In which you please: for all of them shew the longitude, but diuersly. For this you are to note, that the longitude of the starres is reckoned three manner of wayes. First, from the vernall equinoctiall point, that is, from the head of that signe which is called Aries: this longitude is called *Longitude Vera*, the true longitude, and conteyneth as you see, 360. degrees, the which degrees are the innermost, next to the center of the Hemisphere. Secondly, the longitude of the starres, is counted from the first starre in the Ramme, which is that starre that is in his home next aboue his eare: the which kinde of account Copernicke doth follow, and *clavius* after him, the degrees of this longitude are in the midst. Thirdly, the longitude of the starres

starres is counted from the head of *Aries*, but not by continuall succcession of degrees from 1. to 360, but according to the signes of the Zodiacke: so that in this respect, if we be demaunded of the longitude of any starre, as for example of the *Lions heart*, we doe not say as *Ptolomie* useth to speake, that it is in the 143. degree, and 43. minute of longitude, or as *Copernicus* would answer in the 115. degree, and 50. minute, but we say it is in the 23. degree, and 43. minute of *Leo*. These degrees of longitude are the vertermost, and vnder them are set the names and characters of the twelue signes.

Sch. I pray you what is the reason why *Copernicus* did not beginne to count the longitude at the same place where *Ptolomie* began?

Ma. It may be he affected a certaine singularitie, that as he had disagreed from other Astronomers in the order of the celestially orbes, so in this account also he would differ from them. Or else he might haue this reason: He saw that the fixed starres had alwayes one and the same distance or longitude from the first starre in the *Ramme*, but not from the vernal equinoctiall point, and this also hee found to be true, that their latitude did neuer alter: therefore insomuch as he desired to haue the longitude of the starres as certaine as the latitude, hee began rather at the first starre in the *Ramme*, then at the foresayde vernall point.

Sch. Why is that same starre placed so farre off from the head of *Aries*? me thinketh it were good to keepe the figure and the signe together.

Ma. That cannot be; for the starres moouing continually from the west toward the east, cannot keepe one and the same distance from the vernall equinoctiall point, but are caried on forward continually, so that the starres which are now in the signe *Aries*, will bee hereafter in *Taurus*, and from thence will come into *Gemini*, &c.

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Sch. What starre is the first starre in the Ramme from the vernall equinodall point, or as you terme it from the head of Aries?

Ma. In my Hemisphere it is placed 27. degrees, and 53. minutes from that point: the reason that moued me so to do, was this, *Copernicus* diligently obseruing the starres in the yeare of our Lord 1525, found that the first starre in the head of the *Ramme*, was distant from the vernall equinodall not 26. degrees 38. minutes, as *Appiano* affirmed it to be, but 27. degrees, 21. minutes. *Clavius* making his obseruation in the yeare of our Lord 1575, found that the starres had gone on forward 26. minutes more. The number of yeares betwene these two mens obseruations were 50. I my selfe beginning to make these Hemispheres in the yeer of our Lord 1589, obserued this, that there must be added according to the proportion of time 6. minutes more: so that the 26. minutes of *Clavius*, and these 6. being added to the 27. degrees, 21. minutes of *Copernicus*, did moue me to place the first starre of the *Ramme* 27. degrees 53. minutes from the equinodall point. I know the motion of the fixed starres is not altogether vniforme, by reason of the motion of the repidation which is in the eight Sphere, yet notwithstanding I thought it best to kepe an vniforme proportion, because it maketh no great variance.

Sch. Let me nowe make triall of that which you haue taught me: You sayde that when I will finde out the longitude of any starre, I must lay the threede vpon the starre, and stretch it soothvntill it touch the 3. circles which are distinguished into degrees, so shall I finde out the true longitude of the starre, with the distance of it from the first starre in the head of Aries, and the signe wherein it is. For example, I lay the threed vpon the last starre in the taile of the great Beare, which is called Benenach, and stretch it out to the degrees as you sayde, whereby I finde that starre to bee in longitude from the vernall point, 171. degrees, 2. minutes, and from

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from the first starre in the Ramme, it is but 143. degrees, 10. minutes. I finde it also to bee in the 21. degree, and 3. minutes of Virgo. Now put case I knowe the longitude of some starre, but knowe not the starre it selfe, how shall I finde the starre?

Ma. You must vnderstande this, that there are two things requisite for the precise and present finding out of a starre vnkowne, namely, both the longitude, and the latitude: If both these be knowne, we cannot but find out the starre presently: But if but one of these be knowne, we cannot find it out so readily: yet wee may find it so much the sooner if it haue a name in this maner. There is a starre in the North part of the heauen called *Benenath*, where it is, I cannot certainly tell, but I knowe the true longitude thereof to be 171 degrees 3. minutes: How shall I find it out? I lay the threed vpon the 171. degree, 3. minutes: then of this I am sure, that the starre is vnder the threed; therefore looking vp towards the center of the Hemisphere, I finde it to be the last starre in the taile of the *Beare*.

Sch. Let mee make triall of some other. There is a starre in the North part of the heauen called *Alior*, where it is I knowe not certainly, but it hath in longitude 153. degrees. 28. minutes: I lay the threed vpon that degree of longitude, then directing my sight by it, I finde the starre to bee the first of the threes in the taile of the great *Beare*. But here there cometh to my minde a question, or two, wherein I would gladly be resolved: First in this: If I knowe the longitude of any starre from the vernal point, how shall I knowe the longitude thereof from the first starre in the Ramme, and contrariwise?

Ma. I tolde you euen now, that the first starre in the Ramme, is counted to bee 27. degrees 53. minutes to the eastward of the vernal equinoctiall point, subduct those degrees and minutes out of the longitude of any starre from that point, the remainder declareth the distance or longi-

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longitude thereof from the first starre in the *Ramme*. As for example, I know the forenamed starre *Benenach*, to bee in longitude from the equinoctiall point 171. degrees 3. minutes: out of this number I subduct 27. degrees, and 53. minutes, the remainder, which is 143. degrees 10. minutes, declareth the distance of that starre from the first starre in the *Ramme*. Contrariwise, if vnto the longitude of any starre from the first in the *Ramme*, you do adde the foresaide 27. degrees, and 53. minutes, you shall finde out the longitude thereof from the vernall equinoctiall point. As thus: You knowe that *Benenach* is distant from the first starre in the *Ramme*, 143. degrees, 10. minutes. Therefore if you adde to his number 27. degrees, 53. minutes, you shall finde the distance of that starre from the vernall equinoctiall point, to be 171. degrees, 3. minutes.

Sch. I vnderstand you well: My second question is this. If I know the longitude of any starre from the vernall equinoctiall point, how shall I finde by calculation in what signe that starre may be?

Ma. The longitude of any starre assigned, may be diuided by 30. or not. If it cannot be diuided by 30. this is a generall rule, that that starre is in the signe of *Aries*, and therefore the degrees and minutes which expresse the longitude of the starre, expresse also in what degree and minute of that signe the starre is. As for example, the starre which is in the head of *Andromeda*, hath in longitude 9. degrees, 3. minutes, this number cannot be diuided by 30. therefore I say that that starre is in the 9. degree, and 3. minutes of *Aries*.

Sch. But case the assigned longitude of a starre may bee diuided by 30. what shall I conclude there?

Ma. If the assigned longitude may bee diuided by 30. either it may be exactly diuided, so that nothing remaine, or that somewhat remaine. If it may bee so diuided by 30. that nothing remaine, then must you haue an eye onely to your

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your quotient, and reckon for euery vnitie that is in it one whole signe, and pronounce the Starre to be in the very head of the signe which successinely followeth. As for example, I suppose a starre to be in longitude 300. degrees: I deuide this number by 30. the quotient is 10 and nothing remayneth: therefore, for euery vnitie in the quotient I reckon one whole signe, and pronounce the starre to be in the very head of the 11. that is in the head of *Aquarius*. If the longitude assigned cannot be exactly deuided by 30. but there will somewhat remain, then count for euery vnitie in the quotient, one whole signe, and pronounce the starre to be in such a place of the signe following, as the remainder shall amount vnto. As, I suppose a starre to be in longitude 90. degrees, 43. minutes, this number deuided by 30 yeeldeth in the quotient 3. and there remaine 43. min. (for the minutes are neuer deuided) Whereupon I say, that that starre is in the 43. minute of *Cancer*. Againe, the longitude of *Benenac* is 171. degrees, 1. minute. This number being deuided by 30. the quotient is 5. the remainder is 21. degrees, and 3. minutes. Wherefore I say, that *Benenac* is in the sixth signe that is in *Virgo*, and in the 21. degree and 3. min. of the same signe, and so foorth in the rest. Thus much concerning the right lines (which are the circles of longitude) and their vse.

Scho. Let vs now come to the crooked lines: what are they, and what are their vse?

Ma. The crooked lines in the Hemispheres, are either entire and whole circles, or els they are but semicircles. The semicircles are but two: whereof in each Hemisphere there is but one. In the North Hemisphere, it is the northern halfe of the Equinoctiall, in the South Hemisphere, it is the Southern half of it.

Scho. Why did you not distinguish this circle into his degrees, that thereby the right ascension of the starres might

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might be found out?

Ma. I might haue done it, but considering my purpose was to make those Hemispheres to serue only for the longitude and latitude, and for the knowledge of the starres, I neglected what els soeuer. But God willing, in my publick Lecture I will teach you how to do, not that onely, but also how to describe the *Horizon*, &c. in the mean time you shal haue the vse of a table, wherein is expresse the longitude, latitude, right ascension & declination of the chiefeest starres. But to proceede with that which I haue in hand: The entire and whole circles in my Hemispheres, are either Paralelles equally distant one from another, or els they are not Paralels. Of those which are Paralels 3, are distinguished with degrees, the other are not. Those three which are distinguished into degrees, are to be accounted but as one, and that is the Ecliptick: yet was I enforced to make three, because I would haue the three seuerall accounts of the Astronomers concerning longitude, (whereof I spake before) set downe at large. The Paralel circles which are not distinguished into degrees, are the circles of latitude: betweene each of them there are 10. degrees.

Scho. What vse haue these circles?

Ma. They expresse how farre any starre is distant from the Ecliptick, either to the North or South part thereof. If the starre be iust vnderneath any of those circles, you may affirme it to haue that latitude which the number adioyned to that circle, either on the East, or West side of the Hemisphere importeth it to haue.

Sch. But what if the starre be betwixt those circles, what then?

Ma. As the longitude of any starre, being between the right lines, was easilie found out by the helpe of the filke threede, so the latitude of any starre betweene these circles, may be found out by the beade which is vpon the threed.

Scho.

Sch. The degrees of longitude are set downe in the circles which inclose the Hemisphere: but where are the degrees of latitude?

Ma. The degrees of latitude are those, which are drawne from the East and West side of the Hemisphere, to the center thereof.

Sch. How shall I use the bead to finde out the latitude?

Ma. Heerein it will not bee amisse to make the same kind of note which you did before in the longitude, in this maner: Either you knowe the starre, and woulde find the latitude thereof, or els you know the latitude, and would finde the starre. If you knowe the starre, lay the threed ouer it, and drawe the bead iust to the center thereof: then turne it to the scale of the degrees of latitude, and therein you shall finde by the place of the bead, what latitude it hath. Thus I find *Benenac* to haue 54. degrees of latitude. If you knowe the latitude of a starre, the starre hauing a certaine name (for otherwise it cannot well bee found out, because many starres are vnder one, and the same latitude, and therefore by the latitude onely they can not bee distinguished) lay the threed vpon the scale of latitude, and bring the bead to the degrees knowne, then turne the threed rounde about the Hemisphere, and vnderneath the bead in one place or other, you shall be sure to find the starre.

Sch. You said before, that the certaine place of a starre can not be found, except both the longitude and latitude thereof be knowne.

Ma. It is true: for no common thing can certifie a man of that which is speciall and singular. As life is a thing common to trees, to beasts, and to men: yet I can not conclude thus, it liueth: therefore it is a man: for the argument will not hold. Euen so to haue 60. 90. or 100. degrees of longitude, cannot inferre a starre to bee

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this or that especiall starre; because many other may haue the selfe same longitude. Likewise for a starre to haue 54. degrees of latitude, cannot inferre that starre to bee *Benenac*: because many other starres may haue the same latitude. But if both the latitude and the longitude be knowne, you cannot but finde the starre precisely: because, as it is in the terrestriall Globe vnpossible, that diuerse Cities should haue both the same speciall longitude and latitude, euen so in the celestiall Globe it cannot be, that diuerse starres should haue the same speciall longitude and latitude. For being in one and the same side of the ecliptike, if they agree in longitude, they differ in latitude: if they agree in latitude, they differ in longitude.

Sch. Suppose I know both the longitude and the latitude of a starre: howe shall I finde the starre in the Hemisphere?

Ma. Your first consideration must be of the latitude, because by it you shall know to which Hemisphere to go. If it be North latitude, you must haue recourse to the North Hemisphere: if it bee Southren latitude, the starre must be sought for in the South Hemisphere. Then bring the threed first to the scale of latitude, and set the bead to the degree knowne, afterwarde lay the threed on the degree of longitude, and right vnderneath the bead, you shall be sure to find the starre.

Sch. Hitherto we haue spoken of the longitude and latitude: let vs now come to the circles which are not parallel: what are they, and what vse haue they?

Ma. They are the lesser circles of the Globe, and distinguish the five Zones. In the North Hemisphere, are the circles Arctike, and the Tropicke of *Cancer*. In the South, are the circles Antarticke, and the Tropicke of *Capricorne*. What starres soeuer are within the circle Arcticke, or Antarticke, are in the cold or frozen

sen Zone. The starres that are betwene the circle Arcticke and the Tropicke of Cancer item betwene the circle Antarcticke, and the Tropicke of Capricorne, are in the temperate Zone. The starres betwene the two Tropickes, are in the burning Zone.

Sch. Why doe you say that these lesser circles are not parallell, considering that in the celestiaall Globe they are parallell?

Ma. Indeed the Equinoctiaall, the two Tropickes, and the circles Arctick and Antarcticke, are parallell the one to the other: But because the Geometricall proiection and laying foorth of the Hemispheres will not beare it, that they should be equidistant (for they are all made vpon diuerse centers, and therefore cannot be parallell) I thought good for instructions sake, to tearme them not paralleles, although as I say, vpon the Globe they be so.

Sch. Is there any thing els to be saide concerning the Geometricall part of your Hemispheres?

Ma. No: And therefore we will betake our selues to the other part. Yet for the further profite and delight of such as are students in Astronomie, I haue heere set downe a brieue Table, according to the letters of the Alphabet, wherein are conteyned the names of the most famous starres in heauen, in English, Greeke, Latine, Arabicke or Chaldee, and also the periphrastickall name vsed by the Poets: vnto the which I haue adioyned their longitude, latitude, & right ascension, declinatio, degree of the ecliptick, with which they come to the meridian, & the day wherein they come to the meridia at midnight, calculated according to the longitude and latitude set down in my Hemispheres. In the which Table you must obserue this, that the letter V, signifieth *vide*, that is to say, looke for the word folowing as thus, *Aben, v. Draco*, that is to looke for the worde *Draco*. Lo. signifieth lon-

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gitude. N. L. signifieth North latitude: S. L. signifieth
 South latitude: A signifieth the right ascension. N. D.
 North declination: S. D. South declination. So that
 whosoever, being a student in these sciences, shall read
 the names of any stars in the aforesaid languages, he shall
 presently by the helpe of this Table find out the stars in
 the Hemispheres, directing himselfe by the longi-
 tude and latitude, according as the rules

alreadie given doe
prescribe

them not parallels, although as I say, upon the Globe
I thought good for immortals sake, to term
made upon this manner, therefore cannot be
but if they should be equalled for the
tion and laying forth of the Hemispheres will not
one to the other: But because the Geometrical proce-

1. The first part of the book is a general introduction to the subject of the history of the world, and is divided into two parts, the first of which is a general introduction to the subject of the history of the world, and the second of which is a general introduction to the subject of the history of the world.

[illegible]

An Alphabetical Table, conteyning the
English, Greeke, Latine, Arabicke or Chaldee,
and periphrastical names of the most notable stars
in heauen: together with the longitude, latitude,
right ascension, declination, &c. of the
Starres, calculated according to the lon-
gitude and latitude in the
two Hemispheres.

A	tober about midnight.
Aben, v. Draco.	Alangue, v. Serpentarius.
Abrachaleus, v. Pollux.	Alaraph, v. Virgo.
Acarnar, lo. 21. d. 23. m. S. l. 53. d. 30.	Alascha, lo. 258. d. 43. m. S. l. 13. d.
m. A. 43. d. 9. m. S. D. 40. d. 36. m.	20. m. A. 56. d. 20. m. S. D. 36.
It cometh to the meridian with	18. m. It cometh to the meridian
the 15. d. 38. m. of Taurus, and is	with the 18. d. 25. m. of Sagitta-
to be seene in our meridian the	rius, and is there to be seene the
28. of October about midnight.	30. of May about midnight.
Acimon, v. Spica virginis.	Alatrab, v. Scorpius.
Acubene, lo. 119. d. 33. m. N. l. 11. d.	Albirro, lo. 295. d. 43. m. N. l. 49. d.
50. m. A. 125. d. 50. m. N. D. 32. d.	20. m. A. 288. d. 36. m. N. D. 27. d.
17. m. It cometh to our meridian	29. m. It cometh to the me-
with the 3. d. 30. m. of Leo, and	ridian with the 17. d. 8. m. of Ca-
is there to be seene the 13. of	pricorne, & is there to be seene
Ianuarie about midnight.	the 29. of Iune about midnight.
Adigege, v. Olor,	Alcair, v. Aquila.
Egoeeros, v. Capricornus.	Aldebaran, v. oculus Tauri.
Adisr, v. Aquila.	Alderaimim, lo. 7. d. 59. m. N. l. 69.
Amonius senex. } v. Sagittari	d. A. 317. d. 40. m. N. D. 61. d. 8.
Amonia Sagittz. }	m. It cometh to the meridian
Amonij artus. }	with the 15. d. 11. m. of Aqua-
Aesculapius, v. Serpentarius.	rius, and is there to be seene
Agitator, v. Auriga.	the 29. of Iulie about midnight.
Ajvuer, v. Capricornus.	Alezet, v. Leo.
Ajvuer, v. Hircus.	Algebar, lo. 70. d. 23. m. S. l. 31. d. 30
Alacel, v. Spica virginis.	m. A. 73. d. 9. m. S. D. 9. d. 9. m. It
Alamech, lo. 38. d. 3. m. N. l. 13. d. A.	cometh to the meridian with
16. d. 41. m. N. D. 35. d. 46. m. It	the 14. d. 18. m. of Gemini, and
cometh to our meridian with	is there to be seene the 26. of
the 28. d. 44. m. of Aries, and is	Nouember about midnight.
there to be seene the 12. of Oc-	Algedi, v. Capricornus.
	Algenib,

Algenib, v. Perseus.

Algethi, v. Engonasis.

Algeuze, v. Orion.

Algomelisa, v. Canicula.

Algorab, lo. 187. d. 53. m. S. L. 12. d.

30. m. A. 181. d. 14. m. S. D. 14. d.

35. m. It commeth to the meri-

dian with the 2. d. 26. m. of Li-

bra, and is there to be seene the

12. of March about midnight.

Alhabor, v. Canis maior.

Alhaior, v. Hircus.

Aliemeni, v. Canis maior.

Aliot, lo. 153. d. 23. m. N. L. 53. d. 30.

m. A. 189. d. 27. m. N. D. 57. d. 30.

m. It commeth to the meridian

with the 10. d. 17. m. of Li-

bra, and is there to be seene the 20.

of March about midnight.

Alkair, v. Aquila.

Almucedie, v. Virgo.

Alohone, v. Lyra.

Alpheratz, lo. 9. d. 3. m. N. L. 26. d. A.

357. d. 7. m. N. D. 27. d. 17. m. It

commeth to the meridian with

the 26. d. 49. m. of Pisces, and is

there to be seene the 10. of Au-

gust about midnight.

Alpharde, lo. 141. d. 13. m. S. L. 29. d.

30. m. A. 137. d. 8. m. S. D. 14. d.

It commeth to the meridian with

the 14. d. 39. m. of Leo, and is

there to be seene the 24. of Ia-

nuarie about midnight.

Alpharaz, v. Pegasus.

Alphart, lo. 115. d. 13. m. S. L. 58. d.

40. m. A. 106. d. 1. m. S. D. 36. d.

34. m. It commeth to the meri-

dian with the 14. d. 35. m. of Ca-

ncer, and is there to be seene the

25. of December about midnight.

Alramech, v. Arcturus.

Alrutab, v. Stella polaris.

Alfange, v. Fiducia.

Alschere, v. Canicula.

Altar, v. Ara.

Andromeda, lo. 9. d. 3. m. N. L. 26. d.

N. D. 27. d. 17. m.

Angetenar, lo. 26. d. 23. m. S. L. 32. d.

10. m.

Anguier, v. Serpentarius.

Anguis, v. Serpens.

Angitenens, v. Serpentarius.

Anhelar, v. Apollo.

Antares, v. Cor Scorpii.

Antecanis, v. Canicula.

Antinous, lo. 299. d. 53. m. N. L. 21. d.

40. m. A. 297. d. 35. m. N. D. 1. d.

27. m. It departeth from the me-

ridian with the 25. d. 36. m. of

Capricorne, and is there to be

seene the 8. of Iuly about mid-

night.

Apollo, lo. 104. d. 33. m. N. L. 9. d. 30.

m. A. 107. d. 1. m. N. D. 32. d. 9. m.

It commeth to the meridian

with the 15. d. 40. m. of Cancer,

and is there to be seene the 26.

of December about midnight.

Aqua, v. Formahant.

Aquarius, his right shoulder, lo.

327. d. 33. m. N. L. 11. d. A. 325. d.

59. m. S. D. 2. d. It commeth to

the meridian with the 23. d. 39.

m. of Aquarius, and is there to

be seene the 6. of August about

midnight.

Aquila, lo. 295. d. 3. m. N. L. 29. d. 10. m.

A. 291. d. 51. m. N. D. 6. d. 34. m. It

commeth to the meridian with

20. d. 11. m. of Capricorne, and

is there to be seene the 3. of Ju-

lie about midnight.

Ara, lo. 157. d. 23. m. S. L. 26. d. 30.

m. A. 252. d. 33. m. S. D. 49. d. 14.

m. It commeth to the meridian

with the 14. d. of Sagittarius,

and is there to be seene the 25. of

May

Globe in Plano.

9

May, about midnight.

Arace, v. Eugonafis.

Arcas, v. Vrsa minor.

Arctophylax,

ἀρκτοφύλαξ,

v. Boötes.

Arctos, v. Vrsa maior & minor.

10. 198. d. 13. m. N.L.

31. d. 30. m. A. 209. d.

22. m. N.D. 21. d. 54. m.

it cometh to the me

ridian with the 1. d.

32. m. of Scorpius, &

is there to be seene

the 11. of April about

midnight.

Argo, lo. 115. d. 13. m. S.L. 58. d. 40. m.

A. 106. d. 1. m. S.D. 36. d. 34. m. it

commeth to the meridian with

the 15. d. 44. m. of Cancer, and is

there to be seene the 28. of Iune

about midnight.

The Archer, v. Sagittarius.

Ariadna corona, v. Corona Bo-

rea.

Arided, v. Deneb Adigege.

Aries, lo. 27. d. 53. m. N.L. 7. d. 20. m.

A. 21. d. 54. m. N.D. 19. d. 7. m. it

commeth to the meridian with

the 23. d. 41. m. of Aries, and is

there to be seene the 7. of Octo-

ber about midnight.

Arionis vector, v. Delphin.

Arista sacra, v. Spica virginis.

Ascheher,

Aschere,

v. Canis maior.

Asimech, v. Arcturus.

Asinus australis lo. 122. d. 33. m. N.

L. 40. m. A. 125. d. 5. m. N.D. 20. d.

38. m. it cometh to the meridian

with the 2. d. 47. m. of Leo, and is

there to be seene the 12. of Ia-

nuarie about midnight.

Asinus borealis lo. 121. d. 33. m. N.

L. 2. d. 40. m. A. 124. d. 38. m. N.D.

23. d. 7. m. it cometh to the me-

ridian with the 1. d. 11. m. of Leo

and is there to be seene the 11.

of Ianuarie about midnight.

The Asses, v. Asinus borealis, & au-

stralis.

Astræa, v. Virgo.

Asuia, v. Hydra.

Athorax, v. Vergiliz.

Auis, v. Olor.

Auriga, lo. 76. d. 13. m. N.L. 22. d. 30.

m. A. 71. d. 43. m. N.D. 45. d. 8. m.

it cometh to the meridia with

the 13. d. 9. m. of Gemini, and is

there to be seene the 24. of No-

uember about midnight.

ἄστρον, v. Plaustrum.

B

Balena, v. Cetus.

Ballance, v. Libra.

βασιλεύς

Basiliscus, v. Cor leonis.

Bata Caitos, lo. 16. d. 13. m. S.L. 20.

d. A. 22. d. 42. m. S.D. 12. d. 1. m. it

commeth to the meridian with

the 24. d. 31. m. of Aries, and is

there to be seene the 8. of Octo-

ber about midnight.

Bed Algeuze, lo. 83. d. 13. m. S.L. 17.

d. A. 83. d. 29. m. N.D. 6. d. 21. m. it co-

meth to the meridian with the

24. d. 1. m. of Gemini, & is there

to be seene the 5. of December

about midnight.

Beemum, lo. 49. d. 23. m. S.L. 53. d. 50

m. A. 63. d. 2. m. S.D. 34. d. 10. m. it

commeth to meridian with the

5. d. 2. m. of Gemini, and is there

to be seen the 17. of December

about midnight.

Bellatrix, lo. 74. d. 33. m. S.L. 17. d. 30.

m. A. 75. d. 14. m. S.D. 5. d. 12. m. it

commeth to the meridian with

D

the

The vse of the Celestiall

the 16. d. 24. m. of Gemini, and is there to be seene the 28. of November about midnight,

Bellerophon, v. Auriga.

Benenacz. lo. 171. d. 3. m. N. L. 54. d.

N. D. 51. d. 7. m. it cometh to the meridian a little after Spicavirginis.

Beare the lesser, v. Vrsa minor.

Beare the greater, v. Vrsa maior.

Berenices, vel Beronices coma, v. Cincinnus.

Bibenia signifieth a starre of the first magnitude.

Böotes, lo. 179. d. 53. m. N. L. 53. d. 30. m. he is in the meridian with Arcturus.

Brineske, v. Fidicula.

The Brood hen, v. Vergiliar.

Bubulcus, v. Böotes.

The Bull, v. Oculus Tauri.

C

Cæsaries, v. Cincinnus.

Cæteus, v. Engonasis.

Calb alatrab, v. cor Scorpion.

Calb Alezet, v. cor Leonis.

Calisto, v. Vrsa maior.

Canis, v. Vrsa.

Cancer, lo. 121. d. 33. m. N. L. 40. m. it cometh vnto the meridian with Afinus Australis and Borealis.

Canis, v. Cancer.

Canis maior, lo. 98. d. 53. m. S. L. 39.

d. 10. m. A. 97. d. 9. m. S. D. 15. d. 40. m.

it commeth vnto the meridian with the 6. d. 33. m. of Cancer, & is there to be seene the 17. of december about midnight.

Canicula, lo. 110. d. 23. m. S. L. 16. d.

10. m. A. 109. d. 39. m. N. D. 5. d. 57

m. it commeth to the meridian with the 18. d. 7. m. of Cancer, & is there to be seene the 19. of December about midnight.

Canis Erigones,

Canis Icarus,

Canis minor,

Canis Sirius, v. Canis maior.

Canopus, v. Canopus.

Canopus, lo. 98. d. 23. m. S. L. 75. d.

A. 93. d. 29. m. S. D. 51. d. 36. m. it

commeth to the meridian with

the 3. d. 11. m. of Cancer, and is

there to be seene the 14. of De-

cember about midnight.

Capella

Capra Amalthæa,

Capra Olenia,

Capricornus, lo. 298. d. 33. m. N. L.

7. d. 30. m. A. 299. d. 7. m. S. D. 13. d.

6. m. it commeth to the meridian

with the 17. d. 3. m. of Capricorn,

& is there to be found the 10. of

Iulie about midnight.

Caput Draconis, v. Ras Aben.

Caput Equi minoris, v. equi sectio.

Caput Medusæ, vel Gorgonis, lo.

50. d. 53. m. N. L. 23. d. A. 41. d. 40.

m. N. D. 40. d. 1. m. it commeth

to the meridian with the 14. d. 9.

m. of Taurus, and is there to be

found the 27. of Octo. about mid.

Cassiopeia, lo. 19. d. 3. m. N. L. 45. d.

20. m. N. D. 54. d. 23. m.

Castor, v. Apollo.

Cauda Leonis, lo. 165. d. 53. m. N.

L. 11. d. 50. m. A. 171. d. 46. m. N. D.

16. d. 27. m. it commeth to the

meridian with the 21. d. of Vir-

go, and is there to be found the

1. of March about midnight.

Ceginus, lo. 190. d. 53. m. N. L. 49. d.

Centaur^r his right shoulder, lo. 117.

d. 33. m. S. L. 26. d. 30. m. A. 203. d.

56. m. S. D. 38. d. 48. m. it cometh

vnto the meridia with the 25. d.

47. m. of Libra, & is there to be

seen the 5. of April about midn.

Co

Globe in Plano.

10

Cepheus, v. Alderaimim.

Cetus, v. menkar.

Charles his waine, v. Plaustrum.

χελαι, v. Libra.

Chelub, v. Perseus.

χελος, v. Lyra.

Chiron, v. Sagittar. & Centaurus
χουριος, are the two starres in the
lesser Beare, next vnto the Pole
starre.

Ciconia, v. Olor.

Cincinnati, lo. 166. d. 3. m. N. 130. d.

Cor Leonis, lo. 143. d. 43. m. N. 110.

m. A. 146. d. 6. m. N. D. 13. d. 48. m.

It commeth vnto the meridian
with the 23. d. 45. m. of Leo, and
is there to be found the 2. of Fe-
bruarie about midnight.

Cor Scorpion, lo. 243. d. 53. m. S. 14. d.

A. 241. d. 3. m. S. D. 24. d. 54. m. It com-
meth to the meridian with the
3. d. 10. m. of Sagittarius, and is
there to be found the 14. of May
about midnight.

Corona { Borea,
Ariadnes,
Gnossea,

Septentrionalis, lo. 215
d. 53. m. N. 144. d. 30. A. 228. d.
55. m. N. D. 28. d. 26. m. It cometh
to the meridian with the 21. d. 1.
m. of Scorpio, and is there to be
seene the 1. of May about mid-
night.

Corona Austrina, lo. 270. d. 23. m.

S. 1. 21. d. 30. m. A. 270. d. 30. m. S.
D. 45. d. It commeth to the me-
ridian with the 27. m. of Capri-
corne, and is there to be seene
the 12. of Iune about midnight.

χιρως, v. Coruus.

Coruus, lo. 187. d. 53. m. S. 1. 12. d. 30.

m. A. 182. d. 14. m. S. D. 14. d. 35.

m. It commeth to the meridian

with the 1. d. 2. m. of Libra, and
is there to be seene the 12. of
March about midnight.

The Crabbe, v. Cancer.

Crater, lo. 173. d. 53. m. S. 119. d. 20.

m. A. 166. d. 29. m. S. D. 15. d. 26.

m. It commeth to the meridian
with the 15. d. 15. m. of Virgo,
and is there to be seene the 23.
of Februarie about midnight.

αμυρ, v. Crater.

Cribbe, v. Præsepe.

αειδος, v. Aries.

The north Crown, v. Corona Borea

The South Crowne, v. Corona Au-
strina.

Crotus, v. Sagittarius.

κυριος σιμων, v. Corona Austrina.

κυριος, v. Vrsa minor.

κυριος, v. Canis maior.

The Cuppe, v. Crater.

Cygnus, v. Olor.

Custos Erymanthidos vrsa, v.
Boores.

Cynofura, v. Vrsa minor.

Cymba Theflala, v. Argo.

D

Dæmon Meridianus, v. Sagitta.

Danaes filius, v. Perseus.

Delphinus, lo. 308. d. 53. m. N. L. 29.

d. 10. m. A. 303. d. 50. m. N. D. 10.

d. 8. m. It cometh to the meridi-
an with the 1. d. 34. m. of Aqua-
rius, and is there to be founde
the 14. of Iuly about midnight.

Delta, {
Deltoton, { v. Triangulus.

Deneb Adigege, lo. 330. d. 23. m. N.

L. 60. d. A. 308. d. 7. m. N. D. 43. d.

55. m. It cometh to the meridi-
an with the 5. d. 33. m. of A-
quarius, & is there to be found
the 19. of Iulie about midnight.

Deneb Alezer, v. Gauda leonis.

Deneb

D 2

The vse of the Celestiall

Deneb Algedi, lo. 312. d. 53. m. N. l. 4. *12190*, v. *Hadri.*
 d. 20. m. A. 320. d. 55. m. S. D. 10. d. 46. m. It commeth to the meridian with the 18. d. 29. m. of Aquarius, and is there to be scene the 1. of August about midnight.
Deneb Caitos, lo. 356. d. 53. m. S. l. 20. d. 20. m. S. D. 19. d. 49. m.
Διδυμ, v. *Apollo.*
 The great Dogge, v. *Canis maior.*
 The little Dogge, v. *Canis minor.*
 Dolphin, v. *Delphinus.*
 Draco, v. *Ras Aben.*
 Dragon, v. *Ras Aben.*
Dubbe, lo. 131. d. 53. m. N. l. 49. d. N. D. 62. d. 29. m. It commeth to the meridian a little after Cauda Leonis.
E
Edub, v. *Dubbe.*
Εχιδνα, v. *Serpens.*
Εκβ, v. *Virsa maior.*
Engonasis, lo. 248. d. 53. m. N. l. 37. d. 30. m. N. D. 18. d. 40. m. It commeth to the meridian a little before Serpentarius.
Εριγ, v. *Auriga.*
Eniph Alpharaz, v. *Pegasus.*
 lo. 317. d. 33. m. N. l. 20. d. 30. m. N. D. 4. d. 58. m. It commeth to the meridian betweene the Dolphin & Pegasus.
Equi sectio,
Equus prior,
Equiculus,
Equus Alatus,
Equus Bellerophōtis,
Equus Gorgonius,
Equus volans,
Equus maior,
Equus secundus,
Erichthonius, v. *Auriga.*
Eridanus, v. *Flumen.*
Erigone, v. *Virgo.*
Erigonæa Stella, v. *Canicula.*
Europæ Vector, v. *Taurus.*
F
Falco, v. *Lyra.*
Fera, lo. 256. d. 53. m. S. l. 13. d. 30. m. S. D. 32. d. 56. m. It commeth to the meridian a little before the Serpents head.
Fidicula, lo. 278. d. 33. m. N. l. 62. d. A. 275. d. 8. m. N. D. 38. d. 42. m. It commeth to the meridian with the 4. d. 42. m. of Capricorne, and is there to be scene the 16. of Iune about midnight.
Fishes, v. *Pisces.*
 The South Fish, v. *Piscis australis.*
Flumen, vel *Fluuius*, lo. 21. d. 23. m. S. l. 53. d. 30. m. A. 43. d. 9. m. S. D. 40. d. 36. m. It commeth to the meridian with the 15. d. 38. m. of Taurus, & is there to be found the 28. of October about midnight.
Formahant, lo. 328. d. 13. m. S. l. 23. d. A. 339. d. 45. m. S. D. 33. d. 29. m. It commeth to the meridian with the 8. d. 4. m. of Pisces, and is there to be found the 21. of August about midnight.
G
Gallina, v. *Olor.*
Ganymedes, v. *Aquarius.*
 The North Garlande, v. *Corona Borea.*
 The South Garlande, v. *Corona Austrina.*
Gemini, v. *Apollo.*
Geminum sidus, v. *Apollo.*
Geniculatoret genu nixus, v. *Engonasis.*
 The Goate, v. *Capricornus*, or *Hircus.*
 The Golden yard, v. *Orionis Cingulum.*

The

Globe in Plano.

4

The Guardes are the two formost
starres in the lesser Beare wher-
of that which is in the shoul-
der of the Beare hath lo. 128.d. 23.
m.N.l.72.d.40.m. A.221.d.59. m.
N.D.75d.35.m. It cometh to the
meridian with the 14.d.28.m. of
Scorpio, and is there to be scene
the 25. of April at midnight.

H

The Hare, v. Lepus.

The Harpe, v. Fidicula.

Hædi, lo.73.d.23.m. N.l. 18.d. N.D.
40.d.18.m. They are vnder the
bright starre in the right shoul-
der of Auriga, and come to the
meridian a little before it.

Helice, v. Vrla maior & minor.

Heniochus, v. Auriga.

Hercules, v. Engonasis & Pollux.

Hinnulus, v. Equi sectio.

Hyppolitus, v. Auriga.

The forehorse, v. equi sectio.

The flying Horse, v. Pegasus.

Hircus v. Auriga.

Hyantis sidus, v. Oculus Tauri.

Hyades, v. Oculus Tauri.

Hydra, lo.141.d.13.m. S.l.20.d.30.m.

S.D.5.d. It commeth to the me-
ridian almost with Afinus Au-
stralis.

Hydrochous, v. Aquarius.

Hyræa proles, v. Orion.

I

Icarius, v. Arcturus.

ix dux, v. Pisces.

ix dux, v. Piscis meridionalis

Incalurus, lo.206.d.53.m. N.l.53.d.

15.m.N.D.38.d.49. m. It com-
meth to the meridian a little
after Corona Borea.

Ingeniculus, or Ingeniculum, v.

Engonasis,

Io, v. Taurus.

Irga, v. Fidicula.

Iugula, v. Orion.

Iuuenis Iliacus, v. Aquarius.

K

Kaitos, v. Cetus.

Kiddes, v. Hædi.

L

λέρω, v. Lepus.

Lampadias, v. Oculus Tauri.

Lampas Tindaridum, v. Apollo, or
Gemini.

Lar, v. Ara.

Ledæa sidera, v. Apollo, or Gemini

Leo, v. Cor leonis, or Cauda leonis.

Lepus, lo.76.d.43.m. S.l.41.d.30.m.

S.D.18.d.29. m. It commeth to
the meridian with Orion his
girdle.

Libra, lo.223.d.23. m. N.l.18.d.30.m.

A.223.d.30.m. S.D.7.d.47. m. It

commeth to the meridian with

the 15.d.59.m. of Scorpio, and is

there to be scene the 26. of A.

prill about midnight.

Linum Septentrionale, lo.8.d.23.

m.N.l.2.d.15.m. N.D.5.d.24. m.

It commeth to the meridian al-

most with Deneb Kaitos.

Linum Australe, lo.18.d.13.m. S.l.2.

d.20.m. A.19.d.29.m. S.D.5.d. It

commeth to the meridian with

the 21.d.6. m. of Aries & is ther

to bee found the 4. of October

about midnight.

The Lion, v. Cor Leonis.

Lupus, v. Fera.

Lyra, v. Fidicula.

M

Markab Alhabor, lo.113. d.23.m. S

150.d.30.m. S.D.28.d.21. m. It

commeth to the meridian a little

before the lesser Dogge.

Markab Alpharaz, lo.347.d.53.m.

N.l.19.d.40.m. N.D.13.d.15.m.

D 3

This

The vse of the Celestiall

This starre, Scheat Alpharaz,
and Formahant come to the
meridian almost together at
one time.

Medusæ caput, v. caput Medusæ.

Meelleph, v. Præsepe.

Megisto, v. Vrsa maior.

Menkar, lo. 38. d. 53. m. S. l. 7. d. 45. m.
A. 39. d. 1. m. N. D. 7. d. 9. m. It
commeth to the meridian with
the 11. d. 27. m. of Taurus, and is
there to be found the 24. of Oc-
tober about midnight.

Miza, v. Canicula.

Miluius, v. Olor.

Mirach, lo. 15. d. 3. m. N. l. 25. d. 20.
m. A. 12. d. 17. m. N. D. 33. d. 1. m.

It cometh to the Meridian with
the 13. d. 18. m. of Aries, and is
there to be founde the 26. of
September about midnight.

Mytilus, v. Auriga.

N

Nauius, v. Argo.

Nepa, v. Scorpio.

Nessus, v. Engonasis.

Nilus, v. Flumen.

Nodus, lo. 23. d. 53. m. S. l. 9. d. 30. m.

N. D. 32. m. It commeth to the
meridian almost with the first
starre in the head of Aries.

O

Oculus Tauri, lo. 63. d. 53. m. S. l. 5. d.

10. m. A. 62. d. 53. m. N. D. 15. d.

54. m. It commeth to the me-
ridian with the 4. d. 50. m. of

Gemini, & is there to be found
the 16. of No. about midnight.

Olor, v. Sagitta.

Olor, lo. 295. d. 43. m. N. l. 49. d. 20.

m. A. 288. d. 36. m. N. D. 27. d. 29.

m. It commeth to the meri-
dian with the 17. d. 8. m. of Ca-
pricorne, and is there to be

scene the 29. of Iune about mid-
night.

Ophiuchus, v. Serpentarius.

Olenium pecus, v. Hircus.

Orion, v. Bed Algeuze.

ipue, v. Olor.

Orsilochus, v. Auriga.

Orionis cingulum, 78. d. 33. m. S. l.

24. d. 50. m. S. D. r. d. 48. m. It

commeth to the meridian be-
tweene Bellatrix, and Bed Al-
geuze to the Southward.

P

Padus, v. Flumen.

Palilicium, v. Oculus Tauri.

Pan, v. Capricornus.

Parrhasis, v. Vrsa maior.

rapdine, v. Virgo.

Patera, v. Crater.

Pegasus, lo. 326. d. 33. m. N. l. 21. d. 30.

m. A. 321. d. 31. m. N. D. 7. d. 34.

m. It commeth to the meridian
with the 19. d. 6. m. of Aquarius,
and is there to be scene the 2.
of August about midnight.

Perseus, lo. 56. d. 3. m. N. l. 30. d. A.

43. d. 33. m. N. d. 48. d. 9. m. It com-

meth to the meridian with the
16. d. 2. m. of Taurus, and is there
to be scene the 29. of October,
about midnight.

Phanice, v. Vrsa minor.

qarm, v. Præsepe.

Phyllirius senex, v. Sagittarius.

Phryxium vellus, v. Aries.

Pisces, the formost of the Fishes

hath lo. 342. d. 53. m. N. l. 9. d. 15

m. N. D. 1. d. 46. m. It commeth

to the meridian almost with

Scheat Alpharaz.

Pistrix, v. Cetus.

Piscis meridionalis, v. Formahant.

Plaustrum, the seven bright starres
in the hinder part of the great

Beare

Beare marked with the letter A,
are called by this name, v. Altor.

Pleiades, v. Vergilia.

Portitor Helles, v. Arics.

Ὠκεανὸς, v. Cincinnus.

Pole starre, v. Stella Polaris.

Pollux, lo. 107. d. 43. m. N. l. 6. d. 15. m.

N. D. 2. d. 18. 23. m. It commeth to
the meridian presently after Ca-

stor, v. Apollo.

ῥιπιδίον, v. Flumen.

Præcisio equi, 2

Prior equus, 5 v. equi sectio.

Præsepe, lo. 121. d. 33. m. N. l. 40. m.

N. D. 20. d. 11. m. It commeth to

the meridian a little before the
Northen Asse.

Præuindematrix, v. Virgo.

Procyon, v. Canicula.

Propus, lo. 85. d. 23. m. S. l. 40. m. N.

d. 22. d. 50. m. It commeth to

the meridian immediately after
Bed Algeuze to the northward.

ῥοιζοῦσα, v. Virgo.

Puppis, Emonia, Theffalica, Paga-

sa, Iafonia, Palladia, v. Argo.

R

The Ramme, v. Arics.

Ras Aben, lo. 26. d. 23. m. N. l. 75. d.

30. m. A. 266. d. 26. m. N. D. 52. d.

6. m. It commeth to the meri-

dian with the 26. d. 44. m. of

Sagittarius, and is there to bee

seene the 8. of Iune about mid.

Ras Alangué, v. Serpentarius.

Ras Algethi, v. Engonasis.

Ras Algeuze, v. Pollux.

Ras Algol, v. caput Medusæ.

Regulus, v. Cor Leonis.

Rigel Algeuze, v. Algebar.

The Riuer, v. Flumen.

Rostrum equi, v. Equi sectio.

Rostrum Gallinæ, v. Albitro.

Rota Ixionis, v. Corona Australis.

S

Saclateni, v. Hædi.

Sacrarium, v. Ara.

Sadateni, v. Hædi.

Sagitta, lo. 301. d. 23. m. N. l. 39. d.

20. m. N. D. 18. d. 57. m. It com-

meth to the meridian immedi-

ately after Aquila, to the north-

ward thereof.

Sagittarius, lo. 278. d. 13. m. S. l. 18. d.

A. 280. d. 24. m. S. D. 41. d. 12. m. It

commeth to the meridian with

the 9. d. 53. m. of Capricorne, &

is there to be found the 21. of

Iune about midnight.

Saltator, v. Engonasis.

Scamlech alatrab, v. Alascha.

Scheat Alpharaz, lo. 253. d. 23. m.

N. l. 31. d. A. 340. d. 6. m. N. D. 25.

d. 29. m. It commeth to the me-

ridian with the 8. d. 26. m. of

Pisces, and is there to be seene

the 22. of August about mid-

night.

Scheat Aquarij, lo. 332. d. 53. m.

S. l. 7. d. 30. m. A. 317. d. 40. m. S.

d. 17. d. 27. m. It commeth to

the meridian with the 5. d. 51.

m. of Pisces, and is there to bee

seene the 19. of August about

midnight.

Scheder, v. Cassiopeia.

Scorpius, v. Cor Scorpio.

The Scorpion, v. Cor Scorpio.

Sirius Canis, v. Canis maior.

Serpens, lo. 225. d. 33. m. N. l. 35. d.

N. D. 17. d. 2. m. It commeth to

the meridian a little after Co-

rona Borea to the Southward.

The Serpent, v. Serpens.

Semi vir arcipotens, v. Sagittarius.

Serpentarius, lo. 256. d. 3. m. N. l.

36. d. A. 258. d. 27. m. N. D. 13. d. 4

m. It commeth vnto the meri-

idian

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dian with the 19. d. 32. m. of Sagittarius, and is there to be scene the 31. of May about midnight.

The Ship, v. Argo.

Sidus Clazoneum, v. Leo.

Sorum agmen, } v. Vergilia.

The Seuen starres, }

Spica virginis, lo 197. d. 53. m. S. L. 2.

d. A. 196. d. 14. m. S. D. 8. d. 53. m.

It commeth vnto the meridian with the 17 d. 38. m. of Libra, and is there to be scene the 28. of March about midnight.

στειχε, v. Spica virginis.

Stella polaris, lo 81. d. 23. m. N. l. 66.

d. A. 3. d. 27. m. N. D. 86. d. 30. m.

It commeth to the meridian with 3. d. 45. m. of Aries, and is there to be scene the 17. of September about midnight.

σικουρ αικαδιν, v. Corona Borea.

σικουρ ριν, v. Corona Austri-
na.

Succula, v. Oculus Tauri.

Suhel, v. Canopus

νιδεπας, v. Nodus.

The Swanne, v. Olor.

T

Taurus, v. Oculus Tauri, and Vergilia.

Telum, v. Sagitta.

τερε, v. Fera.

Thersilochus, lo. 220. d. 23. m. S. l.

23. d. 45. m. S. D. 37. d. 17. m.

It commeth vnto the meridian a litle after Centaurus his right shoulder.

Thessalica Sagitta, v. Sagittarius.

θουμυλ, } v. Ara.

Thuribulum, }

νεμω, or *νεμωπ*, v. Sagittarius.

Triangulus, lo. 32. d. 13. m. N. l. 16. d.

30. m. N. D. 27. d. 40. m.

It cometh to the meridian with the first starre in Aries, so that these two and Beta Catos are verie nere all in one line.

Trica, v. Cincinnus.

The Twinnes, v. Gemini.

Tympanum, v. Lyra.

Typhon, v. Centaurus.

Tyrannus Hesperiae yndæ, v. Capricornus.

Tyrios regens per alrum, v. Vrfa minor.

V

υαδ, v. Succula.

Vas, v. Crater.

υδρ, v. Aqua.

υδρ, v. Aquarius.

The Virgin, v. Virgo.

Vector, v. Auriga.

Vector Tyriae puella, v. Taurus.

Vergilia, lo. 53. d. 23. m. N. l. 4. d. 50.

m. A. 49. d. 24. m. N. D. 23. d. 59.

They come vnto the meridian with the 21. d. 49. m. of Taurus, and are there to be scene the 4. of Nouember aboute midnight.

Vindemiator, lo. 183. d. 23. m. N. l.

15. d. 10. m. N. D. 12. d. 26. m.

It cometh to the meridian a litle before Spica Virginis.

Virgo, v. Spica Virginis.

Vrigo, v. Draco.

Vraniscus, v. Corona austrina.

Vrna, v. Crater.

Vrna Aquarii, lo. 327. d. 23. m. N. l.

3. d. S. D. 9. d. 36. m.

It cometh to the meridian a litle after Aquarius his right shoulder.

Vrfa

Yrsa minor, v. the Guardes.
Yrsa maior, v. Aliot.

The Woolfe, v. Fera.
The Whale, v. Cetus.

W

Y

Our Ladies Wand, v. Orionis Cin-
gulum.
Vuega, v. Fidicula.
Vultur cadens, v. Lyra.
Vultur volans, v. Aquila, & Olor.
The Waterman, v. Aquarius.
The Waterpot, v. Vrna.

The golden Yarde, v. Orionis Cin-
gulum.
Yed. lo. 237. d. 13. m. N. L. 16. d. 30. m.
S. D. 3. d. 36. m. it cometh to the
meridian a little after Serpens,
and a little before Cor Scorpij.

E

Scho.

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Scho. I doubt not but that this Table will be (as you saide) very profitable and pleasant: especially vnto the mariner, who hath great vse of the declination of the starres. Here albeit I desire you should hasten to the second parte of this worke, yet must I craue an answer to a question or two: May all these starres be seene in euery place?

Ma. No: Haue you forgotten what I tolde you when I read the vse of the Celestiall Globe? Namely, that in a right sphere all the starres arise and set within the space of 24. houres: but if the Pole be rayfed aboue the Horizon, some of the starres arise and set, others neuer arise, others are alwaies aboue the Horizon. Vnderneath the Poles, the starres neuer arise nor set: but those that are aboue the horizon, continue so, and neuer set vnderneath: those that are vnderneath, neuer arise.

Scho. It will not be greatly beside the purpose, to giue me a rule whereby I may know what starres arise and set in euery horizon, what starres doe not arise, and what starres are alwayes ouer it, and neuer set: therefore I pray you gratifie me therewithall.

Ma. The rule is threefolde. First this, adde the height of the Pole, or (which is all one) the latitude of the place wherein you are, vnto the declination of the starre, if the totall summe be lesse then 90. the starre doeth arise and set: but if it be greater, either the starre doeth neuer fall vnder the horizon, or els it doeth neuer appeare aboue it. If the totall summe be iust 90. degrees, the starre propounded doeth but touch the Horizon, and setteth not, or els it toucheth the Horizon, but riseth not,

Otherwise thus:

If the complement of the starres declination be greater then the height of the pole, the starre doth arise & set: but

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but if it be lesser, either the starre doth neuer set, or else it doth neuer arise. If it be equall to the height of the Pole, the starre doth touch the Horizon, but neuer setteth: or else it doth touch the Horrison, but neuer ariseth. The thirde rule is this. If the declination of the starre be lesser then the complement of the height of the Pole, the starre ariseth and setteth: If it be greater, the starre neuer setteth, or neuer ariseth: if it bee equall, it toucheth the Horizon, but neuer setteth, or else neuer ariseth. These rules must be vnderstood according as the place is situate wherein you are: If you bee to the Northward, then the starres hauing such north declination as is before mentioned, neuer set, and they that haue south declination, neuer arise: but if you be to the southward of the line, the stars that haue south declination, neuer set, and they that haue north declination, neuer arise.

Sch. This is the second question: In your Tables the time that you name for the obseruing of the starre is midnight: put case I should looke for it before that time, or after, yet the same night.

Ma. Then obserue proportion according to the time, in this maner. At midnight it is in the meridian, therefore at 11. a clock it is to the eastward of the meridian, about 15. degrees: at 10. a clocke, it is to the eastward of the meridian about 30. degrees, &c. Againe at midnight it is in the meridian, therefore at one a clocke it is to the westward of the meridian about 15. degrees; at 2. a clocke, it is more westward, &c.

Sch. I vnderstand you well. This is yet a third question: You said that on the 16. of November at midnight, *oculus Tauri* will bee in the meridian: put case it were some other time, either before or after that day, at what houre will the same starre be in the meridian?

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Scho. I doubt not but that this Table will be (as you saide) very profitable and pleasant: especially vnto the mariner, who hath great vse of the declination of the starres. Here albeit I desire you should hasten to the second parte of this worke, yet must I craue an answer to a question or two: May all these starres be seene in euery place?

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Scho. It wil not be greatly beside the purpose, to giue me a rule whereby I may know what starres arise and set in euery horizon, what starres doe not arise, and what starres are alwayes ouer it, and neuer set: therefore I pray you gratifie me therewithall.

Ma. The rule is threefolde. First this, adde the height of the Pole, or (which is all one) the latitude of the place wherein you are, vnto the declination of the starre, if the totall summe be lesse then 90, the starre doeth arise and set: but if it be greater, either the starre doeth neuer fall vnder the horizon, or els it doeth neuer appeare aboue it. If the totall summe be iust 90. degrees, the starre propounded doeth but touch the Horizon, and setteth not, or els it toucheth the Horizon, but riseth not,

Otherwise thus:

If the complement of the starres declination be greater then the height of the pole, the starre doeth arise & set: but

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but if it be lesser, either the starre doth neuer set, or else it doth neuer arise. If it be equall to the height of the Pole, the starre doth touch the Horizon, but neuer setteth: or else it doth touch the Horrison, but neuer ariseth. The thirde rule is this. If the declination of the starre be lesser then the complement of the height of the Pole, the starre ariseth and setteth: If it be greater, the starre neuer setteth, or neuer ariseth: if it bee equall, it toucheth the Horizon, but neuer setteth, or else neuer ariseth. These rules must be vnderstood according as the place is situate wherein you are: If you bee to the Northward, then the starres hauing such north declination as is before mentioned, neuer set, and they that haue south declination, neuer arise: but if you be to the southward of the line, the stars that haue south declination, neuer set, and they that haue north declination, neuer arise.

Sch. This is the second question: In your Tables the time that you name for the obseruing of the starre is midnight: put case I should looke for it before that time, or after, yet the same night.

Ma. Then obserue proportion according to the time, in this maner. At midnight it is in the meridian, therefore at 11. a clock it is to the eastward of the meridian, about 15, degrees: at 10. a clocke, it is to the eastward of the meridian about 30. degrees, &c. Againe at midnight it is in the meridian, therefore at one a clocke it is to the westward of the meridian about 15, degrees; at 2. a clocke, it is more westward, &c.

Sch. I vnderstand you well. This is yet a third question: You said that on the 16. of November at midnight, *oculus Tauri* will bee in the meridian: put case it were some other time, either before or after that day, at what houre will the same starre be in the meridian?

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Ma. You know this, that by the motion of the *Primum Mobile*, the starres are euerie day brought to the meridian, but they come not euerie day to the meridian at the same houre: Sometimes they are in the meridian at midnight, and that is alwayes that day wherein the sunne is opposite to that degree of the eclipticke, with which the starre commeth to the meridian. But if the sunne be short of that opposition, or past it, then dooth the time alter: namely euerie 15, dayes one houre in this manner. If the Sunne bee short of that opposition 15, dayes, the starre is in the meridian at 11. of the clocke: if he be past that opposition 15, dayes, the starre is in the meridian at 1. of the clocke, and so consequently you may conclude, according to the proportion of the time.

Sch. Now if you please, I pray you proceed according to your purpose.

Ma. Hitherto, as you haue heard, I haue deliuered vnto you both the names and vse of the right and crooked lines, contained in the Hemispheres, the which you ascribed to the Geometricall part: nowe followeth the Astronomicall part.

Sch. What methode and order shall wee obserue in that part?

Ma. I thinke it not amisse to haue consideration of these two things: First of the writing, then of the starres.

Sch. I pray you doe so: for there are diuerse things which I doe not well conceine in the writing, wherein I will follow this order: First, to enquire the meaning of the Characters, and then of the Alphabeticall letters. I perceiue in your Hemispheres, that by many of the starres there are set downe the characters of the Planets, sometimes one alone, as in the thigh of Gemini, what doth

doth it signifie?

Ma. The character doth expresse the nature of the starre, vnto which it is adioyned, according as the character doth import: If it be the character of *Saturne*, it signifieth the starre to be of his nature: if it be the character of *Iupiter*, it signifieth the starre to be of his nature: and so forth in the rest.

Sch. Sometimes there are two characters together, as in *Pisces*.

Ma. They betoken that starre to admit the nature of both the Planets.

Sch. Sometimes betweene the two characters there standeth the letter P.

Ma. It signifieth the starre to be of the nature of the Planet vnto whome the first character doth belong, yet partly also of the nature of that Planet, to whom the other character apperteineth.

Sch. Sometimes the characters are not ioined with any one star: but are set downe either at the end, or in the midst of the writing which is set by them: as you may see vnder the great Beare.

Ma. Those characters signifie all the starres generally in that constellation, to be of the nature of that Planet which the character doth represent: as those of the great Beare generally are of the nature of *Mars*.

Sch. To what vse is it to knowe the nature of the starres?

Ma. To such questions I am loth to make answer: partly, because I cannot iustifie that in experience, which by reading I know, and partly, because I would not carrie mens mindes away with these matters: Yet if you be desirous to knowe what the starres may betoken that participate the nature of such, or such a Planet, I will briefly set downe what I reade of that matter. The starres which are of the nature of *Saturne*, being well placed, do

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promise a stedfastnesse and princely behavior in taking of paines, bearing of griefe: but being ill placed, they signifie frowardnesse, and daunger, or paine. The starres of the nature of *Iupiter*, being well placed, pretend vertue, wealth, honour: but being ill placed, they foreshew too much patience, & doting folly, with spoile through riot. The starres of *Mars* well placed, breede boldnesse, and make captains and lieutenants: but ill placed, they incline to rashnesse and theft. The starres which are of the nature of the sunne well placed, import vprightnes, courage, and princely promotion: but ill placed, they pretend ambition, and publike death. The starres of the nature of *Venus*, well placed, promise ioy, louing kindnesse, and pietie: but ill placed, they betoken an heape of knauerie, and disgrace. The starres of *Mercurie* well placed, procure witte, merchandrie, knowledge: but ill placed, they import deceit, craft, cosenage, theft, and falsifying of writings. The starres of the nature of the *Moon*, well placed, are a signe of reason, sense, and fauour of the people: but ill placed, they betoken foolishnesse. The starres of the nature of *Saturne*, and *Iupiter*, well placed, promise great studie, wisedome, and the power of the sword: but being ill placed, they insinuate a desire of murder, filching, beheading and hanging. The starres of the nature of *Iupiter* and *Mars*, well placed, leade vs to dukedomes, to be captaines, and to boldnesse: but ill placed, they breede theecues, and such as vnadvisedly challenge all vnto themselves, they cause also a violent death, but yet not necessarily publike. The starres of the nature of the *Sunne* and *Mars*, being well placed, signifie kinges and mightie men: but ill placed, they signifie such whose bodies in some common assembly, on some festiuall day shall bee torne in pieces. The starres of the nature of *Mars* and *Mercurie*, well placed, promise excellent Physitians, and Goldsmiths: but ill placed,

placed, they pretend forgers of coyne. The starres of the nature of *Mars* and the *Moone*, well placed, pretend swift runners and builders: but ill placed, they signifie sericants, and common slaues, labourers, ditchers, and such as make fortifications. These things haue bene by others noted, which I leaue to your consideration.

Sch. You haue satisfied me touching the characters of the Planets which are set downe in your Hemispheres: let vs nowe come to the Alphabeticall letters, which I see are eyther simple or compounde: What vse is there of them?

Ma. Wherefoeuer you see any simple letter standing by a starre (as in the hinder part of the great Beare, the letter A, is set by seuen starres) and that letter standing either by some character of a Planet, or by some writing within or without the constellation, it signifieth that the writing and starres marked with the same letter, haue relation one to another: as in the forenamed starres the woordes which followe the letter A, import this, that the seuen starres marked with that letter make Charles waine.

Sch. Where the letters are compound and ioyned together, either they are without sound, making no syllable, or els they are syllabicall: Of the first sort I finde but one, which is used in many places, and that st. h. and after it followeth some Arithmetical number: as by the Swan which the Latines call Olor, it is written thus, st. h, 17. What meaneth that?

Ma. It is as much to say, *Stellas habet 17*. That is, it hath 17. starres. In like maner where you see *st. h, 4*: *st. h, 41*, &c. It betokeneth the constellation to haue 4, starres, to haue 41. starres, &c. as the Arithmetical numbers do import.

Sch. I finde in the Hemispheres certaine syllables, but they make not perfect woordes, as these, Inf. Card, or Car. Alfon.

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Alfon. Reg.

Ma. *Inf.* signifieth *Informes*, that is starres not enclosed within any forme, which notwithstanding belong to some one constellation, or other. If you desire to knowe how many informed starres belong to each constellation you shall find the number of them set downe presently after that sillable *inf.* *Car.* or *Card.* signifieth *Cardanus*, whose studie in these sciences hath been singular, and therefore his authoritie is great and often alledged, not onely for the bignesse of the starres, as where it is written, *Reg. Car.* that is, *Cardane* counteth it a princely starre, or a starre of the first magnitude, but also for their nature, as where you see it written by the bowe of *Sagittarius*, in the north Hemisphere, the meaning is, that *Cardane* accounteth chat starre to be of the nature of *supiter* and *Mars*. The like is to be vnderstoode of *Alfon.* which signifieth *Alfonso* king of Aragon, whose great trauaile and cost in those studies hath purchased vnto him an eternall name.

Scho. The last thing to be spoken of now, is the writing adioyned vnto each generall constellation, which I take to bee the poeticall reason why every constellation was placed in heauen.

Ma. It is so: And therefore I take it best to reserue it to his place. Let vs therefore come to the starres.

Scho. What other shall bee kept in discounting of them?

Ma. I thinke it sufficient to speake of their adiuncts: namely, of their quantitie, and qualitie, and then briefly I will end this treatise with a note howe to attaine to the knowledge of the starres in the heauen, by the helpe of these Hemispheres.

Sch. When you minde not to speake of the diuision of the starres into generall kinds, nor of the matter whereof they are made,

Ma.

Ma. No: For the starres expressed in the Hemispheres are all of one kinde, that is, fixed, and differ onely in quantitie or qualitie: as for the matter, that belongeth not to the Astronomer, but to the Philosopher: so that whether they be the thicker parte of their orbe, and are to their orbe as a knotte to a tree; or whether they be made of fire, or are fierie stones, let the Philosophers looke to that. I purpose onely to intreate, as I haue saide, of their quantitie, and qualitie. The quantitie of the starres is to be considered, either in their number, or in their magnitude.

Scho. First therefore what is their number? How many are there?

Ma. In my Hemispheres they are 1025.

Scho. Are there no moze in the heauen? We say commonly that they are in number infinite.

Ma. It is without question that there are more in the heauen: but yet they are not infinite in number: for it is written, Psal. 147. *He counteth the number of the starres, & calleth them all by their names.* If they may be counted & named, they are not infinite. Therefore, when as we say, that they are infinite, our meaning is, that their number is exceeding great, as it is apparant, Genesis 22.v.17.

Scho. Why then doe the Astronomers keepe account of no moze, seeing their number is so great?

Ma. The heauen is vnto the Astronomer as a book, euen as, therefore, a man looking vpon a booke lying farre off from his sight, doeth onely account those letters which he doeth see: euen so the Astronomer, although he see a great number of starres, yet maketh he account of no more then these, because he can distinguish no more.

Sch. Haue there no moze been noted heretofore, or since the time that this number was first ratified?

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Ma. The Portingals trauailing to India, haue brought home newes I know not of what starres, and certaine little cloudes neere vnto the South Pole: the which reporte(as I thinke) cannot be true, or if it be true, they must needes be some of the foresaid number. For certainly, considering that *Ptolomee* was so diligent in setting downe their number, and dwelt in such a place, wherein hee might with a little trauaile further, haue founde them out, it is not likely that there were any more worth the noting, then he hath deliuered. As for those which they affirme to be like a crosse, and therefore tearme them by the name of the *Crossers*, they are none other then those which are in the hinder feete of the Centaure: so that we may well say this, that there haue not beene any more obserued, were it not that one exception might be alleadged, concerning a strange starre which appeared in the yeare of our Lord 1572. in the backe of Cassiopeia, and continued almost two yeares, that is, vnto the yeare 1574. in which yeare it vanished away. That starre appeared of so great a bignesse and light at the first, that it seemed to exceede the Euening starre: but within certaine moneths it did so diminish, that it was iudged to be but equall to the Pole starre: in that quantitie it continued vnto the ende. It was a thing most strange and wonderfull, whereby the wittes of many men were set on worke. Some men thought it to be in the firmament wherein the rest of the fixed starres are, but they saide it was not any newe starre, but onely one of those thirteen which by consent of all Astronomers are ascribed to Cassiopeia. The cause why it seemed greater, saide they, was a certaine exhalation comming at that time betweene our sight and it, in the vpper Region of the Aire: and thereby it came to passe, that many men thought it to be a newe starre.

Others

Others affirmed this starre to bee some one of those, which because of their smalnesse cannot well bee seene, yet by reason of an exhalation comming betweene our sight and it, it seemed at that time to be so great, that it was accounted of all men to be a new starre. To conclude, others denied it to be in the firmament, and therefore iudged it not to be a starre, but a comet ingendred in the vpper region of the aire. None of these opinions seemed true to the best Astronomers. For first, they found it out for certaintie, that there were 13. starres in Cassiopeia besides this. Secondly, if the exhalation whereof they talke was so great as they sayd it was, that it made the star to blaze both in England, France, Germanie, Italie, and Spaine, howe came it to passe, that it should make that starre alone to blaze, and none other in the constellation of Cassiopeia? Thirdly, it appeareth by this, that it was no comet, in that the chiefest Astronomers alwayes noted this starre to haue one and the same situation with the rest of the starres next adioyning vnto it, without any diuersitie either in time, or place. For as it was placed at the first with the other starres, so was it placed afterwards continually, and so it appeared to vs here in England, and to them in France, Germanie, or els where. Which thing being so, wee may well affirme that it was not in the vppermost region of the ayre, where other comets are ingendred, but that it was at the least aboue the moone. For no comet at any time hath beene seene in diuers regions vnder one and the same part of heauen; where as this starre appeared alwayes in and vnder one place: so that it could not bee a comet. The best Astronomers therefore concluded thus, that that new starre, whatsoeuer it was, had his place in the firmament, being thereto induced by this argument: because none of them could obserue in it any other motion the that, which vsually they obserue in all the fixed

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starres. For it kept a most certaine and constant motion and the selfe same situation, and distaunce from other fixed starres. If it had beene in any of the spheres of the Planets, it must needs haue moued some other way, and not haue kept one and the same place, considering that the Planets do alwayes shift from place to place, and are neuer in equall distance from any of the fixed starres. This argument also doth conclude, that much lesse this starre could be in the elementall region, because it is vnpossible that there any thing should keepe either a certaine place, or a certaine motion. And therefore it seemed, that that starre was either newly created by Almighty God in the firmament, or els certainly it is possible for a comet to be ingendred there.

Sch. There is yet one question remayning touching the number of the starres. I obserue in the Winter time, that the number of the starres seemeth moze then in Sommer: What should be the reason thereof?

Ma. You obserue this, that it commonly falleth out so, when the weather is coldest, and the nightes are frostie: and thereby I gather the chiefeft reason why in the Winter the starres appeare so many, to bee this. In Sommer the colde hauing no place left vnto it wherein to be, but the middle region of the ayre, where it waxeth at that time most forceable by reason of the *Antiperistasis*, that is, the circumstance of the heate aboue it, and beneath it, consequently it so engrosseth and maketh the ayre so thicke, that our sight being but feeble, can not passe through it, neither can the starres of the lesser magnitude being but weake pearse it, so that they cannot be perceyued. In Winter this colde breaking the prison wherein it was pent, and gathered thicke together, spreadeth it selfe, and becommeth more thinner, and the ayre is more purged, and the grossenesse therof being taken away, yeeldeth to the starres of smaller light
a free

a free and readie passage, through which they may send their beames vnto our sight. An other reason is thus alledged: In the Winter, because the ayre is more purged, the starres do shine verie forceable, wherevpon it commeth to passe, that our sight may bee deceyued in them, and causeth vs to thinke that we perceyue more starres, then indeede we doe: where as wee doe not see more starres, but onely certaine appearances of them, procured by their vehement brightnesse and twinkling. Let this also bee another reason: the nearer the sunne is to the Horizon, the more lightsome is the ayre aboue the Horizon; the more lightsome the ayre is, the fewer starres are seene: therfore cōsidering that in Sommer the depression of the Sunne vnder the Horizon is but litle, and in Winter great, whereby the ayre in Sommer in the night time is more lightened then in Winter, hereupon it commeth to passe that the starres seeme fewer in sommer then in winter.

Sch. Thus much for the number of the starres: what is their magnitude?

Ma. The magnitude of the starres is a certaine quantitie whereby the starres differ one from another. The feuerall magnitudes obserued in the starres are sixe, vnto the which are ioyned certaine other which are called of the Latines *Nebulosa*, and *obscura*, that is, cloudie, and obscure, or darke. Al these magnitudes with those which I last named, are expresse in my Hemispheres with seuerall formes, the which formes are set downe in the north Hemisphere, before the nose of the great Beare: so that haning an eye vnto those formes, you may easilie tel what magnitude any starre hath that is placed in any constellation.

Sch. How many are there of each seuerall magnitude?

Ma. Of the first magnitude there are 15: of the se-

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cond 45. of the third 208. of the fourth 474. of the fifth 217. of the sixt 49. The cloudie starres are 5. the obscure are 9.

Ma. These make but 1022 : you reckoned before 1025.

Ma. It is true : But you must note this, that commonly in rehearsing the number of the starres, the Astronomers omitte those which are in the haire of *Berenice*, if they be added, the whole number is 1025.

Sch. Doe these starres differ onely in light, some of them being more brighter then other some? And doe they also differ in quantitie and compasse?

Ma. They differ in both: For as of the starres, one is brighter, so also one is bigger then another.

Sch. I pray you let mee heare their quantitie, that I may knowe howe much the one is bigger then another.

Ma. The quantitie of nothing can be expressed, but by comparing it ynto some common measure whose quantitie is knowne. As when I say this or that is twentie feete in compasse, a foote is the common measure therof, whose quantitie being knowne I cannot but vnderstand how bigge that is, which is said to be 20. feete in compasse. The common measure whereby the Astronomers expresse the greatnesse of the starres is the earth: Sometimes they compare them with the Diameter of the earth, sometimes with the Globe thereof: therefore these must be knowne and set downe, so may we the better conceiue the greatnesse of the starres. The Diameter of the earth, according to their account which allowe but 60. miles to a degree, conteyneth 6822. miles, and $\frac{1}{11}$, and the whole soliditie of the Globe, conteineth 165042481283, miles, and $\frac{79}{117}$: according to *Ptolomee*, who alloteth to euery degree 62. miles, and $\frac{1}{2}$, it conteineth 7159. miles, and $\frac{1}{11}$, and the whole soliditie of the Globe

Globe hath 192197184917 miles, and $\frac{473}{1111}$. The proportions of the Diameters of the fixed starres compared with the Diameter of the earth, is thus sette downe.

The Diameter of euerie fixed starre of the first magnitude, compared with the Diameter of the earth, hath such proportion vnto it, as 19. hath to 4. therefore it conteyneth the Diameter of the earth 4. times, and $\frac{3}{4}$. thereof.

The Diameter of a starre of the second magnitude, compared with the Diameter of the earth, hath such proportion vnto it, as 269. hath vnto 60. therefore it conteineth it 4. times, and $\frac{2}{3}$. thereof.

The Diameter of a fixed starre of the third magnitude, is vnto the Diameter of the earth, as 25 is vnto 6. therefore it conteyneth the Diameter of the earth 4. times, and $\frac{1}{2}$. thereof.

The Diameter of a fixed starre of the fourth magnitude, is vnto the Diameter of the earth as 19, is vnto 5. therefore it conteyneth the Diameter of the earth 3. times and $\frac{4}{5}$. thereof.

The Diameter of a fixed starre of the fift magnitude, is to the Diameter of the earth, as 119, is to 36: therefore it conteyneth the Diameter of the earth 3. times, and $\frac{11}{12}$. thereof.

The Diameter of a fixed starre of the sixt magnitude, is to the Diameter of the earth, as 21. is vnto 8. therefore it conteyneth it 8. times, and $\frac{1}{2}$. thereof.

As for the proportions of the clowdie and obscure starres, they are not expressed, because they are but fewe, and of no great account in respect of their finalnesse.

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The proportions of the fixed starres compared with the Globe of the earth, are thus set downe.

A Starre of the first magnitude, is to the Globe of the earth, as 6859. is vnto 64. therefore it conteyneth the Globe of the earth 107. times, and $\frac{1}{2}$. thereof.

A starre of the second magnitude, is to the Globe of the earth, as 19465109. is vnto 216000: therefore it cōteineth the Globe of the earth 90. times, & $\frac{1}{2}$. thereof.

A starre of the third magnitude, is to the Globe of the earth, as 15625. is vnto 216: therefore it conteyneth the Globe of the earth 72. times, and $\frac{1}{2}$. thereof.

A starre of the fourth magnitude, is to the Globe of the earth, as 6859. is vnto 125. therefore it conteyneth the Globe of the earth 54. times, and $\frac{1}{2}$. thereof.

A starre of the fift magnitude, is to the Globe of the earth 1685159. is vnto 46656. therefore it conteyneth the Globe of the earth 36. times, and $\frac{1}{2}$. thereof.

A starre of the sixt magnitude, is to the Globe of the earth, as 9261. is vnto 512. therefore it conteyneth the Globe of the earth 18. times, and $\frac{1}{2}$. thereof.

Sch. These things seeme straunge vnto me: and now I see, that the Prophet had iust cause to crie out and say, *The heauens declare the glorie of God, and the firmament sheweth the works of his hand.* Haue you any thing else to note concerning the quantitie of the starres?

Ma. No: And therefore I will come to the qualitie of them.

Sch. This word qualitie, hath a verie large signification, and may be applied to many things in the starres: as to their light, to their nature, to their twinkling, to their figure and soyme.

Ma. You say true: But I woulde vnderstande in this place

place onely their twinkling and figure.

Scho. What is the cause why the stars do twinkle?

Ma. The continuall motion of the Aire: in the which there are two motions to be considered: the one is proper vnto the Aire, which is vpward in a right line: the other is not proper, but receined from the heauens. For as the heauen is caried about in the space of 24. houres, so doeth it leade after it whatsoeuer is beneath it: whereby it commeth to passe, that the forme of the starre appearing in the Aire, is greatly distracted, so that it seemeth to vs to cast foorth sparkes, which wee call the twinkling thereof. And that this is so, it may easily be confirmed by the motion of the water, which running on swiftly, causeth the starres, which are by reflexion scene in it, to twinkle much more then they doe in the aire, by reason that the motion thereof is to vs more forceable then the motion of the Aire.

Scho. If the motion of the Aire be the cause of the twinkling of the starres, why should not the Planets twinkle as well as they?

Ma. The reason why the Planets doe not twinkle, is their nearenes vnto vs. The nearer a light is vnto vs, the more strong is the beame that commeth from it: the stronger the beame is, the lesser is it troubled and distorted: so that indeede the beame of the Planets being stronger, by reason of their nearenes, then that it may be troubled by the aire, is a cause why they doe not twinkle, although their forme appeare in the aire, as the forme of the fixed starres doeth.

Scho. Doth the twinkling of the starres signifie any thing?

Ma. It doeth signifie the motion of the aire generallie: but if it bee more then vsuall, it signifieth

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winde . Thus much concerning that matter, now followeth the figure of the starres.

The figure is considered either particularly in euery one, or generallie in many. The figure generallie which is considered in euery one, is the roundnes: for this we holde, that the figure of euerie starre is round, and not three square, or foure square, &c. Of this there are many and sundrie arguments. First our sense, which is neuer deceiued in his proper object: for that which the sight iudgeth to be yealow, is yealowe: and that which the feeling iudgeth to be hote, is hote, &c. Now the sight iudgeth the starres to be rounde, and therefore we conclude them to be so. Againe, the most noble bodie requireth the most noble figure: the moste excellent bodies are the heauenly bodies: therefore they craue a rounde figure, for that of all other is counted most excellent. This figure is most apparant in the Moone, and in the light which she receaueth from the sunne, the which light she alwayes receiueth circularlie, as we see it euery night.

Scho. Yet that is not so alwayes: for in the first quarter, and the thirde, her light is parted with a right line.

Ma. The reason of that is yeilded by the masters of perspective, who say, that euery great circle in a round bodie, standing full before our sight, seemeth to bee a right line, although it bee crooked: and therefore that cannot be an argument against the roundnesse of the Moone, especially considering the dayes wherein shee receiueth her light circularlie, are more in number then those, wherein her light is parted with a right line. This shall suffice for a confirmation of the particular figure of each seuerall starre, which is their roundnes.

The

The figure which is generally considered in manye of them together, is their constellation.

Sch. What is a constellation?

Ma. A constellation is a certaine number of starres representing by their place, and order, (after a certaine sort) the forme of some living creature, or some other kinde of thing else. It is called otherwise an *Asterisme*, forme, or figure.

Sch. Why were the starres brought into constellations?

Ma. For instruction sake: things cannot be taught without names: to give a name to euerie one had beene both troublesome for the master, and for the scholler: troublesome for the master to deuise: troublesome for the scholler to remember. As the merchant therefore casteth all his billes of one kinde into one boxe, and out of that boxe can fetch them as occasion serueth: euen so the Astronomers haue reduced many starres into one constellation, that thereby they may tell the better where to seeke them, and being sought how to expresse them.

Sch. Why did they bring them into these figures, and not into other?

Ma. There were three generall reasons that induced them thereto: First, these figures expresse some proper- tie of the starres that are in them, as those of the *Ramme* to be hote and drie, *Andromeda* chained, betokeneth imprisonment: the head of *Medusa* cut off, signifieth the losse of that member. *Orion* with his terrible and threat- ning gesture importeth tempest, and terrible effects: the *Serpent*, the *Scorpion*, and the *Dragon*, signifie poyson: the *Bull*, insinuateth a melancholike passion: the *Beare* in- ferreth crueltie, &c. Secondly, the starres, if not precise- ly, yet after a certaine sort, doe represent such a figure, and therefore that figure was assigned them: as for ex-

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ample the *Crowne*, both north and south: the *scorpion*, and the *Triangle*, represent the figure which they haue. The third cause, was the continuance of the memorie of some notable man, who either in regard of their singular paines taken in *Astronomie*, or in regard of some other notable deed had well deserved of mankind.

Sch. Are these constellations of any antiquitie? and who was the first authour of them?

Ma. I could neuer read who was the first authour of each particular constellation, we receiue them of *Ptolomee*, and he followed the *Platonickes*: so that their antiquitie is great. Moreover, we may perceiue them to be ancient, by the *Scripture*, and by the *Poets*. In the 38. chapter of *Iob*, there is mention made of the *Pleades*, *Orion*, and *Arcturus*, and *Mazarsch*, which some interpret the twelve signes: *Iob* lived in the time of *Abraham*, as *Syluagrat* maketh mention in his booke *de Com- mensurandis locorum distantijs*.

Sch. How many constellations are there, and which are they?

Ma. There are 48. In the north part ther are 21. namely, 1. *Perseus*, the lesser beare: 2. *Perseus*, the great beare: 3. *Draco*, the Dragon: 4. *Cepheus*: 5. *Bootes* or *Ursus*: 6. *Corona Boreas*, the north Crowne: 7. *Engonastis*, the Kneeler: 8. *Lyra*, the Harpe: 9. *Ola*, the Swanne: 10. *Cassiopeia*, 11. *Perseus*: 12. *Henichus* or *auriga*, the Cart: 13. *Serpentarius*, the man that holdeth the serpent: 14. *Serpens*, the serpent: 15. *Sagitta*, the Arrowe: 16. *Aquila*, the Eagle: 17. the Dolphin: 18. *Equisetis*, the lesser Horse: 19. *Pegasus*, the flying or winged horse: 20. *Andromeda*: 21. *Triangulum*, the Triangle.

In the *Bedicke* of the eight sphere or firmament, there be 12. according to the number of the signes. 1. *Aries*, the Ramme: 2. *Taurus*, the Bul: 3. *Gemini*, the Twinnes: 4. *Cancer*, the Crabbe: 5. *Leo*, the Lion: 6. *Virgo*, the Vir-
gin.

gin. 7, *Libra*, the Ballance. 8, *Scorpius*, the Scorpion. 9, *Sagittarius*, the Archer. 10, *Capricornus*, the Goate. 11, *Aquarius*, the Waterman. 12, *Pisces*, the Fishes. These are partly in the one Hemisphere, and partly in the other, being divided into two peeces by the eclipticke line.

In the south part, there are 15. 1, *Cetus*, the Whale. 2, *Orion*. 3, *Taurus*, the Riner. 4, *Lepus*, the Hare. 5, *Canis maior*, the greater Dogge. 6, *Canis minor*, the lesser Dog. 7, *Argonavis*, the Shippe. 8, *Hydra*. 9, *Crater*, the Cuppe. 10, *Corvus*, the Crow. 11, *Centaurus*, the Centaure. 12, *Lupus*, the Wolfe. 13, *Lacus Aræ*, the Altar. 14, *Corona Australis*, the South Garland. 15, *Piscis natus*, the south Fish.

Sch. Petrus thinketh there are two which you have not named: that is, *Antinous*, and *Berenices haire*.

Ma. Those were deuised since, and therefore are not vsually accounted in the number of the constellations.

Sch. Doe all Astronomers retaine those constellations and this number?

Ma. No: some count but 44. some 46. some 52 some 72. But by the chiefeſt Astronomers the foresaide number is retained.

Sch. Are all the ſtarres incloſed within theſe conſtellations?

Ma. You may eaſily ſee by the Hemifpheres, that they are not: there are 108, exempted ſauing that, as I ſayd before, of later time 6. of them haue bene reduced into the figure of *Antinous*, and three into the haire of *Berenice*.

Sch. I pray you now let vs come to the Poeticall ſable which concerneth theſe conſtellations: what reaſon had they for their deuice?

Ma. Beſides that which hath bene ſaid before touching the reaſon why theſe conſtellations were inuented, the Poets in ſetting forth theſe fables had this pur-

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pose, to make men fall in loue with Astronomie : For many times it falleth out so among vs, that albeit wee are not willing to giue eare vnto a matter, or to reade a discourse because it is profitable, yet will wee giue eare vnto it, and take paines to reade or heare it, because it is pleasant. When *Demosthenes* could not get the people of *Athen* to heare him in a matter of great importance, and profitable for the common wealth, he began to tell them a tale of a fellowe that solde an Assie, by the which tale he so brought on the Athenians, that they were both willing to heare his whole oration, and to put in practise that whereto he exhorted them. The like intent had the Poets in these fables. They saw that Astronomie being for commoditie singular in the life of man, was almost of all men vtterly neglected : Hereupon they beganne to set forth that art vnder these fictions, that thereby such as could not be perswaded by the commoditie, might by the pleasure be induced to take a viewe of these matters, and thereby at the length fall in loue with them. For commonlie you shall note this, that he that is ready to reade the fable, cannot content himselfe therewith, but desireth also to knowe the constellation, or at leastwise some principall starre therein.

Sch. I pray you deliuer these fables as you haue gathered them out of the Poets, & see whether you may produce the like effect in the minds of our men, which the Poets did intend in their fables. I thinke it best to followe that order which you haue set downe before, that is, first to speake of the Northern constellations, and then to goe on vnto them of the Zodiacke, and last of all to them of the South.

Ma. I am most willing so to doe : and therefore I will follow that order, beginning first with the lesser *Beare*. This constellation hath the preheminence, because it is the nearest of all the rest vnto the North pole, and

is called of the Greekes *Arctos*, wherevpon the pole is called the pole Arcticke, for that it is neare vnto that constellation. It is also called *Helice minor*, because of the smal reuolution, which it maketh round about the pole: or rather of *Elice*, a towne in Arcadia, wherein *Calysto*, which is the great *Beare*, and mother to the lesser *Beare*, was bredde. It is also called *Cynosura*, because this constellation, though it carrie the name of a Beare, yet it hath the taile of a Dogge. Last of all, it is tearmed *Phœnice*, because that *Thales*, who first gaue the name to this constellation, was a Phœnician: And therefore the Phœnicians being taught how to vse it in their nauigations, did call it by the name of the Countrey wherein *Thales* was borne. It consisteth of seuen starres, which the Latines call *Septentriones*, because by their continuall motion, those seuen starres doe weare the heauens. The Spaniards call them all *Bosina*, that is, an Horne, because they may be brought verie well into that forme, whereof that which is in the ende of the taile, is called the Pole starre, by reason of the nearenesse therof vnto the Pole of the worlde. For it is distant from the Pole, according to some, 4. degrees, 9. minutes: according to other some, and as I finde it by calculation, 3. degrees, 30. minutes. For the declination thereof is but 86. degrees, 30. minutes. The Arabians call it *Alrukaba*: and of the Scythians it is saide to be an Iron naile, and is worshipped of them as a God. The two starres that are in the shoulders of the Beare, are called the *Guardes*, of the Spanish worde *Guardare*, which is to beholde, because they are diligently to be looked vnto, in regard of the singular vse which they haue in nauigation.

The reason why this constellation was brought into the heauen, is diuersly set downe, and first in this manner: *Saturne* hauing receiued of the Oracle, that one of his sonnes should banish him out of his kingdome, determined

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terminated with himselfe to kill all the men children that he should beget. Whereupon hee gaue commandement vnto *Ops*, his wife, being then great, to shewe him the childe so soone as euor it was borne: But shee bringing forth *Iupiter*, and being greatly delighted with his fauour, gaue the childe vnto two Nymphes of *Crete*, dwelling in the mount *Dyctæ*, whereof this was one, and was called *Cynosura*, the other was *Helice*, the greater Beare *Iupiter*, after that according to the Oracle he had bereaued his father of the kingdome, in recompence of their paines and courtesie, translated them both into the heauen, and made of them two constellations, whereof the one is named the lesser Beare, the other the greater.

Other some say, that it was *Arcas*, the sonne of *Calysto*, and they tell the tale in this manner. *Calysto* a Nymph of singular beautie, daughter to *Lycæon*, king of *Arcadia*, induced by the great desire that shee had of hunting, became a follower of the Goddesse *Diana*. After this, *Iupiter* being enamoured with her beautie, and out of hope, by reason of her profession, to winne her lone in his owne person, counterfeited the shape of *Diana*, lay with *Calysto*, and gate her with childe, of whome was borne a sonne, which she called *Arcas*. *Diana*, or rather *Iuno*, being herewith verie much offended, turned *Calysto* into a Beare. *Arcas* her sonne at the age of fifteene yeares, hunting in the wooddes, by chance lighted vppon his mother in the shape of a Beare: who knowing *Arcas* her sonne, stoode still, that he might come neare vnto her; and not be afraied: but he fearing the shape of so cruell a beast, bent his bowe of purpose to haue slaine her. Wherevpon *Iupiter* to prevent the mischiefe, translated them both into the heauen, and of them made two senerall constellations. Vnto the lesser Beare, there belongeth but one starre vnformed.

The

The second constellation is *Ursa maior*, the greater beare, called also of the Greekes *Arctos* and *Helice*, consisting of 27. starres. Among the which, those 7. that are in the taile & hinder parte of the beare, are most obserued, and they are al noted in the *hemisphere* with the letter a. The Latines call them *Plaustrum*, and of our me they are called *Charles his waine*, because the starres doe stande in such sorte, that the 3. which are in the taile, resemble the horses, and the other which are in the flanke of the beare, stande (after a certaine manner) like the wheelles of a wagon, or chariot: and they are by some supposed to be greater then the sunne. The reason wherefore this constellation was brought into heauen, is set downe at large in the former constellation, and therfore needeth not here to be repeated. This constellation was first inuented by *Nauplius*, the father of *Palamedes*, the Greek, and in great vse with the Grecians. And this is to be noted both in this and the former constellation, that they neuer set vnder the Horizon in any parte of Europe. Which, though it so fall out by reason of their situation in the heauen, yet the Poets say that it commeth to passe through the displeasure and hatred of *Iuno*, who for that she was by *Calyss* made a cuckqueane, and they notwithstanding, (as she tooke it in despite of her) were translated into heauen, requested of her brother *Neptune* that he would neuer suffer those starres to set within his kingdome. To whose requeste *Neptune* condescended, so that throughout all Europe they neuer come near vnto the sea, or touche the Horizon.

Scho. I marvel why (seeing the bath the forme of a Beare) her taile should be so long.

Ma. Imagine that *Iupiter*, fearing to come too nigh vnto her teeth, layde holde on her tayle, and thereby drewe her vp into the heauen: so that shee of her selfe being very weightie, and the distance from the earth to

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the heauens very great, there was great likelihood that her taile must stretch : Other reason know I none. The vnformed starres belonging vnto this constellation, are eight.

The thirde constellation is *Draco*, the *Dragon*, of some named the *Serpent*, of others the *Snake*, by the Arabians *Aben*, and of *Iunctinus Florentinus*, *Vrago*, because he windeth his taile rounde about the Pole of the *Ecliptick*, it conteyneth 31. starres. This was the Dragon that kept the golden apples in the Orchard of the *Hesperides*, (now thought to bee the Ilandes of Cape de Verde,) and for his diligence and watchfulnesse was after wardes translated into heauen : yet others say, that he came into heauen by this occasion : When *Minerva* withstoode the Giants fighting against the Gods, they, to terrifie her, threwe at her a mightie Dragon : but she catching him in her handes, threw him presently vp into heauen, and placed him there as a memoriall of that her resistance. Others woulde haue it to bee the Serpent *Python*, whom *Apollo* slewe after the deluge.

The fourth is *Cepheus*, which conteyneth in him eleuen starres, and hath two vnformed. This was a king of the *Ethiopians*, and husbände vnto *Cassiopeia*, and father of *Andromeda*, whom *Perseus* married. Hee was taken vp into heauen with his wife and daughter, for the good deserts of *Perseus* his sonne in lawe, that hee and his whole stocke might bee had in remembrance for euer. The starre which is in his right shoulder, is called by the Arabians, *Alderab iemin*, that is, his right arme.

The fift is *Bootes*, the driuer of the Oxen (for so I suppose the name to signifie, rather then an Heardsman : for he hath not his name because he hath the care of any heard of cattell, but onely because he is supposed to drive Charles his waine, which is drawne by three Oxen:)

en:) he is also called *Arctophylax*, the keeper of the Beare, as though the care of her were committed vnto him. This constellation consisteth of 22. starres. Some will haue *Bootes* to be *Arcas*, the sonne of her, who before was said to be turned into the greater Beare. And they deliuer the tale in this maner: *Lycan* the father of *Calisto*, receiuing *Iupiter* as a guest into his house, tooke *Arcas* his daughters sonne, and cut him in pieces, and among the other seruices set him before *Iupiter* to bee eaten. For by this meanes he thought to proue if his guest were a God, as he pretended to be. *Iupiter* perceiuing this heinous fact, ouerthrew the table, set the house on fire with lightning, and turned *Lycan* into a wolfe: but gathering and setting together againe the limmes of the childe, he committed him vnto a certaine sheepeheard of *Arcolia* to be kept, *Arcas* afterwards comming to mans estate, and hunting in the woods, lighted at vnwares vppon his mother transformed by *Iuno* into the shape of a Beare, whom he pursued into the Temple of *Iupiter Lycan* whereunto by the lawe of the Arcadians, it was death for any man to come. Forsomuch therefore as they must of likelihood both be slaine, *Calisto*, by her sonne, and he by the lawe, *Iupiter* to auoide the mischiefe, of meere pitie, tooke them vp into heauen. Vnto this constellation belongeth but one starre vnformed, and it is betweene the legges of *Bootes*, and by the Grecians is called *Arcturus*, because of all the starres neare the great Beare named *Arctos*, this starre is first of all seene next vnto her taile in the Euening. The Poeticall inuention is thus.

Dionysius the father of *Erigone*, hauing receiued of God *Bacchus* a flagon of wine, to declare how good it was for mortall men, trauielled therewith into the territories of Athens, and there beganne to carrowse vnto certaine shepheards. They being greatly delighted with the plea-

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fantnesse of the newe drinke, began to drawe so hard at the same, that ere they left off they were past one and thirtie, and in the ende were faine to lay their heades to rest. But comming vnto themselves againe, and finding their braines scarcely in good temper, they killed *Icarus*, thinking indeede that hee had either poisoned them, or at the least wise made their braines intoxicate. *Erigone* was readie to die for grieve, and so was *Mera* her little dogge: But *Iupiter* to allay their grieve, placed her father in heauen betwene the legges of *Bootes*.

The sixt constellation is *Corona borea*, the Northern garland, and consisteth of eight starres, yet *Ouid* sayth that it hath nine. This was that garland that *Venus* gaue vnto *Ariadne*, whē she was married vnto *Bacchus* in the Isle *Naxus*, after that *Theseus* had forsaken her: which garland *Bacchus* placed in the heauen, as a token of his loue. *Nonidius* wil haue it to be the Crown of the virgin *Mary*.

The seuenth is *Engonasis*: This constellation hath the name, because it is expressed vnder the shape of a man kneeling vpon the one knee, and is therefore by the Latines called *Ingeniculum*. It containeth 29 starres, and wanteth a proper name, because of the great diuersitie of opinions concerning the same. For some will haue him to be *Hercules*, that mightie conquerour, who for the worthines of his twelue labours, was placed in heauen nigh vnto the Dragon whom he ouercame. Others tell the tale thus: That when the *Titans* fought against the Gods, they for feare of the Giants, ran all vnto the one side of the heauen: wherevpon the heauen was ready to haue fallen, had not *Hercules* together with *Atlas* set his necke vnto it and stayed the fall: and for this desert he was placed in heauen.

Others affirme that it is *Lycan*, who seemeth by his gesture to lament the transforming of his daughter *Calisto*, into the shape of a Beare, and holding forth his hands,

handes, requireth that shee may bee restored vnto her former shape. Some say that it was *Thesens*. Others againe affirme him to be *Thamyris*, whose eies the Muses put out for contending with them, and placed him in heauen, for an example vnto all others, that they might learne not to striue with their betters.

Others say that it was *Orpheus*, lamenting the death of his wife *Euridice*. Others affirme it to be *Ixion*, that would haue had to doe with *Iuno*. Others call him *Promethens*, whom *Iupiter* caused to be bound vpon mount *Caucasus*. This diuersitie of opinions ariseth vpon the gesture of the man: because kneeling as hee doth, and stretching forth his handes, it may be supposed to be any of them that are here named. But the most receiued opinion is of those Poets that affirme him to bee *Hercules*. Vnto this constellation belongeth but one starre vnformed.

The 8. is *Zyra*, the Harpe, and containeth 10. starres: whereof thus goeth the fable. The riuer *Nilus* swelling aboue his bankes, overflowed the countrey of *Aegypt*. After the fall whereof, there were left in the fields diuers kindes of liuing things, and amongst the rest a *Tortuse*. *Mercurie*, after the flesh therof was consumed, the sinewes still remaining, found the same, and striking it, he made it yeeld a certaine sound. Whereupon he made an Harpe like vnto it, hauing three strings, and gaue it vnto *Orpheus* the sonne of *Calliope*. This Harpe was of such excellent sound, that trees, stones, foules, and wilde beastes were said to folow the sound thereof. After such time therefore that *Orpheus* was slaine by the women of *Thrace*, the Muses by the good leaue of *Iupiter*, and at the request of *Apollo*, placed this Harpe in heauen. *Nonidius* will haue it to bee the Harpe of *Dauid*, whereby hee pacified the euill spirit of *Saul*. This constellation was afterwards called *Pulsur cadens*, the falling Grype: and *Fal-*

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co, the Falcon: or *Tympanum*, the Tymbrell.

The 9. is *Olor*, or *Cygnus* the Swanne, called of the Chaldeans *Adigege*: It hath 17. starres. Of this constellation the Poets fable in this maner. *Iupiter* being overtaken with the loue of *Leda*, the wife of *Tyndarus* king of *Oebalia*, and knowing no honester way to accomplish his desire, procured *Venus* to turne herselfe into an Egle, and himselfe he turned into the shape of a Swanne. Flying therefore from the Egle as from his naturall enemye that earnestly pursued him, he lighted of purpose in the lappe of *Leda*, and, as it were for his more safetie, crept into hir bosome. The woman not knowing who it was vnder that shape, but holding (as she thought) the Swan fast in her armes, fell on sleepe. In the meane while *Iupiter* enioyed his pleasure, and hauing performed that he came for, betooke him againe vnto his winges, and in memoriall of his purpose attained vnder that forme, he placed the Swanne among the starres.

Ouid calleth this constellation *Miluius*, the Kite, and telleth the tale of his placing in heauen in this maner. The earth being greatly offended with *Iupiter*, because he had driuen *Saturne* his father out of his kingdome, brought foorth a monstrous bull, which in his hinder partes was like a Serpent, and was afterwards called the fatall Bull, because the destinies had thus decreed, that whosoever could slay him, and offer vp his entrailes vpon an Altar, should overcome the eternall Gods. *Briareus* that mightie Giant, and auncient enemye of the Gods, overcame the Bull, and was readie to haue offered vp his entrailes, according vnto the decree of the destinies: But *Iupiter* fearing the euent, commaunded the fowles of the aire to snatch them away: which although to their power they endeouored, yet there was none of them found so forward and apt to that action, as the Kite, and for that cause hee was accordingly rewarded with

with a place in heauen. Some call this constellation *o'pis*, that is, the Birde : others call it *Vultur volans*, the flying Gripe : It is also called *Gallina*, the Henne. Vnto this constellation do belong two vnformed starres.

The tenth is *Cassiopeia*, She consisteth of 13. starres. This was the wife of *Cepheus*, and mother of *Andromeda*, whome *Perses* married, and for his sake was translated into heauen, as some write. Others say, that her beautie being singular, she waxed so proud, that she preferred herselfe before the *Nereides*, which were the nymphes of the sea : For the which cause, vnto her disgrace, and the example of all others, that in the pride of their hearts would aduance themselves aboue their betters, she was placed in the heauen with her head as it were downeward, so that in the reuolution of the heauen she seemeth to be carried headlong.

The 11. is *Perses*, He hath 26. starres. This was the sonne of *Iupiter*, whom he in the likenesse of a golden shower, begat vpon *Danae* the daughter of *Acrisus*. This *Perses* comiung vnto mans estate, and being furnished with the sword, hat, and wings of his brother *Mercurie*, and the shield of his sister *Minerva*, was sent by his foster father *Polydectes*, to kill the monster *Medusa*, whome he slue, and cutting off her head, caried it away with him. But as he hastened homeward, flying in the aire he spied *Andromeda*, the daughter of *Cepheus* and *Cassiopeia*, for the pride of her mother bounde with a chaine vnto a rocke, by the sea side, there to be deuoured of a Whale. *Perses* taking notice and pitie of the case, vndertooke to fight with the monster, vpon condition that *Andromeda* might be his wife. To be short, he deliuered *Andromeda*, married her, and returning homeward vnto the Isle of *Seriphus*, he found there his grandfather *Acrisus*, whom by mischaunce and vnaduisedly hee slue with a quoyte (or as *oid* reporteth with the sight of the horrible

rible

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rible hed of *Medusa*) not knowing that it was his grandfather. But after wardes vnderstanding whom hee had slaine, he pined away through extreme sorrow. Wherevpon *Iupiter* his father pitying his grieffe, tooke him vp into heauen, and there placed him in that forme wherein he ouercame *Medusa*, with his sword in the one hande, the head of *Medusa* in the other, and the wings of *Mercurie* at his heeles. This constellation, because of the vnluckinesse thereof, is called by the Astrologers *Cacodemus*, that is, vnluckie, or vnfürunate. For, as they say, they haue obserued it, that whosoeuer is borne vnder this constellation hauing an euill aspect, shall be stricken with the sword, or loose his head. *Nonidius* saith, that it is *David* with *Goliath* his head in the one hand, and his sword in the other. The vnformed stars belonging vnto this constellation, are three.

The 12. constellation is *Auriga*, the Wagoner, or Carter: he consisteth of 14. starres. The Arabians call him *Alais*: the Greekes *Heniochus*, that is, a man holding a bridle in his hand, and so is he set forth in my Hemispheres. *Erastostenes* affirmeth him to be *Erichonius* king of Athens, the sonne of *Fulcanus*: who hauing most deformed feete, deuised first the vse of the wagon or chariot, and ioyned horses together to drawe the same, to the ende that sitting therein, hee might the better conceale his deformities. For which cause *Iupiter* translated him into heauen.

Others say that it was *Bellerophon* that rode vpon *Pegasus*, the winged horse. Others, that it was *Hippolytus* the sonne of *Theseus*, who was torne in pieces by his own horses that drew his chariot. *Nonidius* would haue it to be *Elias* the Prophet, who was taken vp into heauen in a fierie Chariot. In this constellation, there are two other particular constellations to be noted, whereof the one consisteth but of one starre alone, which is in the left shoulder

shoulder of *auriga*, and is called *Hircus*, or *Capra*, the *Goate*, the Arabians call it *alhaiot*: the other consisteth of two little starres, a little beneath the former standing, as it were in the hande of *Auriga*. This constellation is called *Hadi*, the *Kiddes*. The tale is thus: *Saturn* (as you heard before) had receiued by Oracle, that one of his sonnes shoulde put him out of his kingdome: whereupon he determined to deuoure them all, *Ops* by stealth conueyed away *Iupiter*, and sent him vnto *Melissus* king of Creete, to be nourished. *Melissus* hauing two daughters, *Amalthaa* and *Melissa*, committed *Iupiter* vnto their nourserie. *Amalthaa* had a Goate that gaue sucke vnto two Kiddes, so that by the milke of this Goate she nourished *Iupiter* very well. To requite this her care and courtesie, *Iupiter*, after that he had put his father out of the kingdome, translated her Goate, & the two Kiddes into heauen, and in remembrance of the Nourse, the Goate is called *capra Amalthaa*. *Novius* saith, that when Christ was borne, and his birth by the Angels made manifest vnto the Shepheards, one of them brought with him for a present, a Goate and two young Kiddes, which in token of his good will, were placed in heauen.

The thirteenth is *Ophiuchus*, or *Serpentarius*, that is, the Serpent-bearer. This constellation hath no proper name, but is thus intituled, because hee holdeth a Serpent in his handes. It containeth twenty foure starres. Some say that it is *Hercules*, and reporte the tale in this manner. *Iuno* being a great enemy vnto *Hercules*, sent two Snakes to kill him as he lay sleeping in his cradle. But *Hercules* being a lustie childe (for *Iupiter* had spent two dayes in begetting him) without much a doe strangled them both. In memoriall of so strange an euent, *Iupiter* placed him in the heauen, with a Serpent in his handes.

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Others thinking it much that *Hercules* shoulde bee thrust into so many places of heauen, say that it is not he, but *Æsculapius* the sonne of *Apollo*, most famous for the cunning that he had in physick, which was so great, that for the same he was accounted a God: the tale goeth thus: After that *Hippolytus* was torne in peeces by his owne horses, *Diana* (of whom for his chastitie & other vertues he was entirely beloued) greatly agreed with the mischance, craued the help of her Nephew *Æsculapius*. He condescended to the request of his Aunt, and restored *Hippolytus* vnto his life againe. The Destinies hereat greatly offended, and fearing least their power shoulde be lesse esteemed, if men might so easilie recover life, complayned vnto *Iupiter*, who in his furie flew *Æsculapius* with a thunderbolt. *Apollo* the father of *Æsculapius*, tooke the matter hainousslie: But *Iupiter*, to pacifie him, translated his sonne into heauen. *Nonidius* will needes haue it to be *Paul* the Apostle, with the viper which he shook off his hand into the fire, after hee had by shipwrack been cast vpon the Isle of *Malta*: *Acts* 28. The vnformed starres of this constellation, are five.

The fourteenth is *Serpens*, the Serpent of *Ophiuchus*, which consisteth of 18. starres. Some say it is one of the Serpents that shoulde haue slaine *Hercules* in his cradle. *Nonidius* saith it is the viper that bitte *Paul* by the hande. Others deliuer the tale in these wordes: *Glaucus* the sonne of *Minos*, king of *Crete*, was by misfortune drowned in a barrel of hony. *Minos* his father craued the helpe of *Æsculapius* the phisition: and that hee might perforce be driuen to help the childe, he shut him vp in a secrete place, together with the dead carcasse. Whiles *Æsculapius* stood in a great maze with himselfe, what were best to be done, vpon a sodaine there came a serpent creeping towards him, the which serpent hee slewe with the staffe that he had in his hande.

After

After this there came in another Serpent, bringing in his mouth a certaine hearbe, which he laid vpon the head of the dead Serpent, whereby he restored him vnto life againe. *Aesculapius* vsing the same hearbe, wrought the same effect vpon *Glaucus*. Whervpon after that *Aesculapius* was placed in heauen, as was mentioned before, the Serpent was also placed there with him.

The 15. is *Sagitta*, or *Telum*: the Arrowe, or Dart. This was that arrow wherewith *Hercules* slue the Eagle, or Grype, that fed vpon the liuer of *Promethens*, being tied with chaines to the top of mount *Caucasus*, and in memoriall of that deede, was translated into heauen. Others will haue it to be one of those arrowes which *Hercules* at his death gaue vnto *Philoctetes*, vpon which the destinie of *Troie* did depend. The whole constellation containeth 5. starres.

The 16. is *Aquila*, the Eagle, which is also called *Vultur volans*, the flying Grype: it hath in it 9. starres. The Poeticall reason of this constellation is this: that *Iupiter* turning himselfe into the forme of an Eagle, tooke *Ganymedes* the Trojan boy, who he greatly loued, vp into heauen, and therefore in signe thereof (because by that meanes he performed his purpose) he placed the figure of the Eagle in the heauen. There belong vnto this constellation 6. starres, before time vnformed, but nowe brought into the constellation of *Antinous*. But whervpon that name should come I know not, except it were that some man deuised it there, to currie fauour with the Emperor *Adrian* who loued one *Antinous Bithynicus* so well, that hee builded a Temple in his honour at *Masina*.

The 17. is *Delphines*, the Dolphin: it containeth 10. starres. Yet *Ouid* in his second booke *de Fastis* sayth; that it hath but 9. Neither did the auncient Astronomers attribute vnto it any more, according to the number of

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the Muses, because of all other fishes the Dolphin specially is said to be delighted with musicke. The tale goeth thus concerning this constellation. When *Neptune* the God of the Sea greatly desired to match with *Amphitrite*, she being verie modest and shamefast, hid her selfe. Whereupon he sent many messengers to seeke her out, among whom the Dolphin by his good happe did first find her, and perswaded her also to match with *Neptune*. For which his good and trustie seruice *Neptune* placed him in heauen.

There is also another tale concerning this matter, and that is the historie of *Arion*. This man being in his time singular for handling of the lute, was for his cunning sent for into Italie, where in a short space, he gathered together great substance: and sayling homewarde vnto *Lesbos*, the mariners who were priuie to his riches, conspired to kill him. Which thing *Arion* perceiuing, requested them earnestly, that before they would put him to death, he might play one fit of mirth. They condescended vnto his request: *Arion* therefore playing on his Instrument, through the sweetnesse of his musicke, prouoked a Dolphin to drawe nigh vnto the shippe: *Arion* espied the Dolphin, and casting himselfe immediately ouer boord, was receiued by the fish, who vpon his backe brought him safe vnto the shore. This thing pleased *Iupiter* so well, that in recompence of his good and gentle nature, he placed him in heauen.

Others say, that when *Bacchus* had transformed the mariners that would haue betraied him into Dolphins, he placed one of them in heauen, that it might be a les-son for others to take heede how they caried any man out of his way, contrarie both to his desire, and their owne promise. *Nonidius* referreth this constellation vnto the fish which saued *Jonas* from drowning.

The 18. is *Equiculus*, the little horse, and it consisteth of

of foure starres. This constellation is named almost of no writer, sauing *Ptolomee* and *Alfonsus* who followeth *Ptolomee*, and therefore no certain tale or historie is deliuered thereof, by what meanes it came into heauen.

The 19. is *Equus alatus*, the winged horse, or *Pegasus*, which conteineth 20. starres. Yet *Cuid* 3. *Fast.* saith that it hath but 15. This horse was bred of the blood of *Medusa*, after that *Persens* had cut off hir head, and was afterward taken and tamed by *Bellerophon* whiles he drank of the riuer *Pirene* by *Corynth*, and was vsed by him in the conquest of *Chimera*. After which exploit, *Bellerophon* being wearie of these earthly affaires, endeououred to flie vp into heauen: But being amazed in his flight, by casting his eyes downwarde to the earth, he fell from his horse. *Pegasus* notwithstanding continuing his course (as they feigne) entered into heauen, and there obtained a place among the other constellations.

The 20 is *Andromeda*: she consisteth of 23. starres: but one of them is common, both vnto her and *Pegasus*. This was the daughter of *Cepheus* and *Cassiopeia*, and the wife of *Persens*: the reason why *Minerva*, or *Iupiter* placed her in the heauens, is before expressed. *Nonidius* referreth this constellation vnto *Alexandra* the virgin, whom *S. George* through the good helpe of his horse, deliuered from the Dragon.

The 21. is *Triangulum*, the Triangle, called also *Delatoron*, because it is like the fourth letter in the Greeke Alphabet, made in this maner Δ which they call *Delta*, it consisteth of foure starres. They say that it was placed in the heauen by *Mercurie*, that thereby the head of the Ramme might be the better knowne. Others say that it was placed there in honour of the Geometricians, among whom the Triangle is of no small importance. Others affirme that *Ceres* in times passed, requested *Iupiter* that there might be placed in heauen some figure repre-

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senting the forme of Sicilie, an Islande by reason of the fruitfulnessse greatly beloued of *Ceres*, which Island because it is three square, was therefore represented in the heauens vnder the forme of a Triangle.

Some will haue it placed there to expresse the diuision of the whole world into three partes. Others a-nouch it to be a representation of that place of *Ægypt* which is called *Delta*, which place the Gods choose to hide themselues in from the Gyant *Typhew*. And therunto *Nonidius* seemeth to leane, and sayeth, that because *Christ* with *Mary* and *Ioseph* fled into *Ægypt*, therefore this figure was placed in heauen, to signifie, that they three found refuge in that place. Thus much concerning the constellations of the North part.

It followeth now to speake of those which are in the Zodiacke of the Firmament, among which *Aries* the Ramme is the first, called of the Greekes, *ἄριος*, it containeth in it 13. starres, which were brought into this constellation by *Thyestes*, the sonne of *Pelops*, and brother of *Atreus*. This is that Ramme vpon which *Phryxus* and *Helle* his sister, the children of *Athamas* did sit, when as they fled from their stepmother *Ino* ouer the sea of *Hellepont*: which Ramme was afterwarde for his good seruice, translated into heauen by *Iupiter*. Others say that it was that Ramme which brought *Bacchus* vnto the spring of water, when through drought he was likely to haue perished in the deserts of *Lybia*. *Nonidius* will haue this to be the Ramme which *Abraham* offered vp in stead of his sonne *Isaac*.

The starre that is first in the head of the Ramme, is that frō whence our latter Astronomers do account the longitude of all the rest, and it is distant from the heade of *Aries* in the tenth sphere 27. degrees, 53. minuts. The vnformed starres belonging vnto it, are five.

The second is *Taurus*, the Bull, which consisteth of 23. starres.

starres. This was translated into the heauen in memoriall of the rape committed by *Iupiter* vpon *Europa* the daughter of *Agenor* king of *Sidon*, whom *Iupiter* stole away in the likenesse of a white Bull, and transported her into Candie. Others say, that it was *Io*, the daughter of *Inachus*, whom *Iupiter* loued, and turned her into the similitude of a Cow, to the intent that *Iuno* comming vpo him at vnwares, should not perceiue what a part he had plaied. *Iupiter* afterwarde in memoriall of his craftie coueyance, placed that figure in heauen. The reason why the Poets name not certainly whether it be a Cowe or a Bull, is because it wanteth the hinder partes, yet of the most of them it is termed a Bull. *Nonidius* sayth that it was the Oxe which stoode together with the Asse at the manger in the stable where Christ was borne. But whether there were any Oxe there, or no, I know not how he will proue it. In the backe of the Bull there are certaine litle stars standing in a cluster, which we do comonly call by the name of the 7. starres, although there can hardly be discerned any more the sixe. These are reported to be the seuen daughters of *Atlas*, called *Atlantides*, whereof sixe had companie with immortall Gods, but the seuenth whose name was *Merope*, being married vnto *Sisyphus*, a mortall man, did therefore withdraw and hide herselfe, as being ashamed that she was not so fortunate in matching herselfe as her sisters were. Yet some say that that starre which is wanting, is *Electra* the eldest daughter of *Atlas*, & that therefore it is so dimme, because she could not abide to behold the destruction of Troy, but at that time and euer since she hid her face.

The reason why they were taken vp into heauen, was their great pitie towards their father, whose mishappe they bewayled with continuall teares. Others say, that whereas they had vowed perpetuall virginitie, and were in daunger to loose it by reason of *Orion*, who greatly as-
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failed them, being ouertaken with their loue, they requested *Iupiter* to stand their friend, who translated them into starres, and placed them in that part of the heauen.

The Poets call them *Pleiades*, because when they arise with the Sunne, the mariner may commit himselfe vnto the sea. Others wil haue them to be so termed, *à pluendo*, because they procure rainie weather. Others giue them this name, of the Greeke worde *πλειους*, because they be many in number. They be called also *Vergilia*, because they arise with the Sunne in the spring time. Likewise *Athoraiæ*, because they stande so thicke together; Our men call the by the name of the seuen Starres, or Broode henne. The Astronomers note this as a speciall thing concerning these starres, that when the Moone and they doe meet together, the eyes are not to be medled withall nor cured if they be sore. Their reason is, because they are of the nature of *Mars*, and the *Moone*.

Moreouer, there are five starres in the face of the Bull, representing the Romane letter V. whereof one which is the greatest, is called the Buls eie. They be called *Hyades*, and were also the daughters of *Atlas*, who so long bewailed the death of their brother *Hyas*, slaine by a Lion, that they died for sorrow, and were afterwarde placed in heauen, in memoriall of the great loue that they bare vnto him. The auncient Romans called the Buls eie *Parilicium*, or *Palelicium*, of *Pales* their Goddesse, whose feast they celebrated after the coniunction of this starre and the Sunne. The vnformed starres belonging vnto this constellation are eleuen.

The third is *Gemini*, the Twinnes, which consist of 18. starres. The Poets say, they are *Castor* and *Pollux*, the sonnes *Leda*, brethren moste louing, whome therefore *Iupiter* translated into heauen. Some say, that the one of them is *Apollo*, the other *Hercules*. But the most

most affirme the former. *Nonius* saith that they were there set for Christ and *Iohn* the Baptist: but I feare me he auoucheth more then his texte wil affoorde him. The vnformed starres of this constellation are seuen, whereof one is called *Propus*, because it is placed next before the foote of *Caster*.

The fourth is *Cancer*, the Crabbe, which hath nine starres. This is that Crabbe which bitte *Hercules* by the heele, as he fought with the Serpent *Hydra*, in the fenne of *Lerna*, and for his forward seruice, was placed in the heauen by *Iuno*, the vtter enemy of *Hercules*. In this constellation there are starres much spoken of by the Poets, although they be but small, whereof one is called the *Cribbe*, other two are the two Asses, whereof the one was the Ass of *Bacchus*, the other of *Pulcane*, vpon which they rode to battaile, when as the Gyantes made warre against the Gods, with whose braying and strange noyse the Gyants were so skarred vpon the soudaine, that they forsooke the felde and fled. The Gods getting the victorie, in triumphing manner translated both the Asses, and their manger into heauen. The vnformed starres of this constellation are foure.

The fiste is *Leo*, the Lion, which hath seuen and twentie starres. This is that Lion which *Hercules* ouercame in the wood of *Nemæa*, and was coated in the heauen, in remembrance of so notable a deede. *Nonius* saith, this is one of those Lyons which were in the denne into which *Daniel* was caste, and was therefore placed in heauen, because of al other he was most friendly vnto *Daniel*.

In the breast of this constellation is that notable great starre, the light whereof is such, as that therefore it is called of the Astronomers, *βελοναυς* or *Regulus*, that is, the viceroy, or little king among the rest. The vnformed starres belonging vnto the Lion are eight, whereof

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three make the constellation which is now called *Coma Berenices*, that is, the haire of *Berenice*. Which constellation was first found out and inuented by *Conon* the Mathematician, but described by *Callimachus* the Poet. The occasion of the fable was this. *Ptolomeus Evergetes* hauing married his sister *Berenice*, was shortly after enforced to departe from her, by reason of the warres which he had begun in Asia. Whereupon *Berenice* made this vowe, that if he returned home in safetie, she would offer vp her haire in *Venus* Temple. *Ptolomee* returned safe, and *Berenice* according to her vow, cut off her haire and hung it vp. After certaine dayes the haire was not to be found, whereupon *Ptolomee* the king was greatly displeased: But *Conon*, to please the humor of the king, and to currie fauour with him, perswaded him that *Venus* had conueyed the haire into heauen. *Conon* attributeth seven starres vnto it, but *Ptolomee* alloweth it but three, because the other be insensible.

The sixte is *Virgo*, the Virgine, which hath fixe and twentie starres. This is affirmed to bee Iustice, which among all the Gods, sometimes liuing vpon the earth, did last of all forsake the same, because of the wickednes that began to multiplie therein, and chose this place for her seate in heauen.

Others say that it is *Astraea*, the daughter of *Astraeus*, one of the Gyants that were called *Titanes*, who fighting against the Gods, *Astraea* tooke vpon her the defence of them against her owne father, and was therefore after her death commended vnto the heauens, and made one of the 12. signes.

Others say that it was *Erigone*, the daughter of *Icarus*, who for that her father was slaine by certaine drunken men, for very greef thereof, did hang her selfe: but *Jupiter* taking pitie of the virgine for her naturall affection, translated her into the heauen.

In her right wing, there is one starre of speciall name, which by the Astronomers is called *Vindemiator*, that is, the gatherer of Grapes. This was *Ampelos*, the sonne of a *Satyre* and a Nymph, and greatly beloued of *Bacchus*, vnto whom, in token of his loue, *Bacchus* gaue a singuler faire Vine planted at the foote of an Elme (as the maner was in olde time.) But *Ampelos* in haruest gathering the Grapes, and taking little heede vnto his footing, fell downe out of the Vine, and brake his neck. *Bacchus* in memoriall of his former affection, translated him into heanen, and made him one of the principall starres in this constellation. There is another great starre in the left hand of the Virgin, called of the Latines *Spica*, of the Greekes *σπικα*, of the Arabians *Alzimach*, that is, the Eare of corne: wherby they signifie, that when the Sunne cometh vnto this signe, the corn waxeth ripe. *Albumazar* the Arabian, & *Nonidius*, take this constellation for the virgin *Mary*, but how wisely, any child may iudge. The vnformed stars belonging vnto *Virgo*, are six.

The seventh is *Libra*, the Ballance, which conteyneth 8. starres. *Cicero* calleth it *Iugum*, the Yoke. And here it is to bee noted, that the auncient Astronomers, that first set downe the number of the constellations conteyned in the Zodiacke, did account but 11. therein. So that, the signe which now is called *Libra*, was heretofore called *χρυσ*, of the Grecians, that is to say, the clawes of the Scorpion, which possesseth the space of two whole signes. But the latter Astronomers being desirous to haue 12. signes in the Zodiacke, called those eight starres whereof the Clawes of the Scorpion dooth consist, by the name of *Libra*, not that there was any Poeticall fiction to induce them thereto, but onely moued by this reason, because the Sunne ioyning with this constellation, the day and the night, are of an equall length, and are, as it were equally poyfed in a paire of

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ballance. Yet, as I remember, some will haue this to be the ballance, wherein Iustice, called also *Astræa*, weighed the deedes of mortall men, and therein presented them vnto *Iupiter*. It hath 9. vnformed starres apperteyning vnto it.

The 8. is *Scorpius*, the Scorpion, called of the Arabians, *Alatrab*, of *Cicero*, *Nepa*, and consisteth of 21. starres. The fiction is thus: *Orion* the sonne of *Hyreus*, greatly beloued of *Diana*, was by reason of his great strength wont to make his boast, that he was able to ouercome what beast soeuer was bred vpon the earth. The earth being moued with this speech, brought forth the Scorpion, whereby *Orion* was stung to death. *Iupiter* therupon at the request of the earth, translated both the Scorpion and *Orion* into heauen, that it might be for euer a lesson for mortal men, not to trust too much vnto their owne strength: And to the ende that thee might signifie the great enmitie betwene them, he placed them so in the heauen, that when soeuer the one ariseth, the other setteth, & they are neuer both of them seene aboue the Horizō at once. *Nonidius* writing of this cōstellation, is verie childish in his conceite, and for ought that I can see, doth falsifie the worde of God. For he sayth, that this was the Scorpion or Serpent, whereby *Pharaoh* king of *Egypt*, was enforced to let the children of *Israel* depart out of his countrey, whereas there is no such thing in the Scripture, & that God in remembrance that the Scorpion caused *Pharaoh* to do that which neither *Moses* could perswade him to doe, nor his other plagues enforce him vnto, did therefore place the signe of the Scorpion in heauen. *Gulihelmus Postellus* would haue it to be the Serpent which beguiled *Eue* in Paradise. The vnformed starres about the Scorpion, are three.

The 9. is *Sagittarius*, the Archer: which hath 31. starres. Touching this signe, there are among the Poets sundrie

fundrie opinions. Some say that it is *Crocus*, the sonne of *Eupheme*, that was nurse vnto the Muses. This *Crocus* was so forward in the learning of the liberall sciences, & in the practise of the feates of actiuitie, that the Muses entreated *Iupiter*, that he might haue a place in heauen. To whose request *Iupiter* inclining, made him one of the 12. signes. And to the end that he might expresse the excellent qualities of the man, he made his hinder parts like vnto an horse, thereby to signifie his singular knowledge in horsemanship: and by his bowe and arrowe, hee declared the sharpnesse of his wit. Wherevpon the Astrologers haue this conceit, that he that is borne vnder *Sagittarius*, shall attaine vnto the knowledge of many artes, and be of a prompt wit, and great courage.

Virgile affirmeth this to be *Chiron* the Centaure, who for his singular learning and iustice, was made the master of *Achilles*. At which time *Hercules* comming to visite him (for he had heard both of the worthinesse of the schoolemaster, and of the great hope of the scholler) brought with him his quiver of arrowes dipped in the blood of the Serpent *Hydra*. But *Chiron* being desirous to see his shafts, and not taking heede vnto them being in his hand, let one of them fall vpon his foote, and being greatly tormented, not onely by the anguish of the poyson working in the wonnd, but much more for that he knew himselfe to be immortall, and his wound not to be recouered by medicine, he was enforced to make request vnto the Gods, that he might be taken out of the worlde, who pitying his case tooke him vp into heauen, and made him one of the 12. signes. *Nonidius* sayth that it is *Ioash*, to whome *Eli* the Prophet gaue his bowe and arrowes, whereby he slue the Assyrians, and was therefore translated into heauen: but let them beleeue it that will.

The 10. is *Capricornus*, the Goate, which consisteth

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of 28. starres. The Poets say that this was *Pan*, the God of the shepherdes, of whom they feigne in this maner. The Gods hauing warres with the Gyants, gathered themselves together into *Egypt*, *Typhon* the Gyant pursued them thither: wherby the Gods were brought into such a quandarie, that well was hee that by chaunging his shape, could shift for himselfe. *Iupiter* turned himselfe into a Ramme: *Apollo* became a Crowe: *Bacchus* tooke vpon him the shape of a Goate: *Diana* lurked vnder the forme of a Catte: *Iuno* transformed herselfe into a Cowe: *Venus* chaunged her selfe into the forme of a Fish: *Pan* leaping into the riuer *Nilus*, turned the vpper part of his bodie into a Goate, and the neither part into a Fish. *Iupiter* wondering at his strange deuise, would needes haue that image and picture translated into heauen, and made one of the 12. signes. *Guilhelmus Postellus*, referreth it vnto the scape Goate, which was let go into the wilderness, whereof mention is made, *Leuit. 16. 10.* In that the hinder part of this signe is like a fishe, it betokeneth that the latter part of the moneth wherein the Sunne possesseth this signe, inclineth vnto raine.

The 11. is *Aquarius*, the Waterman, which hath 42. starres, whereof some make the figure of the man, other some the waterpot, and some the streamie of water that runneth out of the pot. This is feigned to bee *Ganymedes* the Troian the sonne of *Tros*, and *Callirhoe*, whom *Iupiter* did greatly loue for his excellent fauour and beautie, and by the seruice of his Eagle carried him yp into heauen, where he made him his cupbearer, and called him *Aquarius*. Others notwithstanding thinke it to be *Deucalion*, the sonne of *Prometheus*, whom the gods translated into heauen in remembrance of that mightie deluge which happened in his time, whereby mankinde was almoste vtterlie taken away from the face of the earth. The vnformed starres belonging vnto this signe,

signe are three.

The 12. is *Pisces*, the Fishes, which together with the line that knitteth them together, conteine 34. stars: whereof the Poets say thus: *Venus* and *Cupide* her sonne comming vpon a certaine time vnto the riuer *Euphrates*, and sitting vpon the banke thereof, vpon a sudden espied *Typhon* the Gyant, that mightie and fearefull enemye of the Gods, comming towards them. Vpon whose sight they being stricken with exceeding feare, leapt into the riuer, where they were receiued by two Fishes, and by them saued from drowning. *Venus* for this good turne, translated them into heauen. *Guilhelmus Postellus* would haue them to be the two Fishes wherewith Christ fedde the five thousand men. The vnformed stars of this constellation are foure.

Thus much concerning the 12. constellations that are in the Zodiacke of the eight sphere. Nowe followe the other that are in the South side of the heauen. Among which *Cetus* the Whale is accounted the first, and is also called the Lion, or Beare of the sea. This is that monstrous fish, that should haue deuoured *Andromeda* but being ouercome by *Perseus*, was afterwards translated into heauen by *Iupiter*, as well for a token of *Perseus* his manhoode, as for the hugeness of the Fish it selfe. The constellation consisteth of 22. starres.

The second is *Orion*, who hath 38. starres. The reason why this fellow was placed in heauen, was set downe before, when mention was made of the Scorpion, by whom it is sayd *Orion* was slaine. The ancient Romans called this constellation *Iugala*, because it is most pestiferous vnto cattell, and as it were the verie cutthroate of them. There are bright starres in his girdle, which we commonly call our Ladies yarde, or wand. *Nouidius* applying the sworde of *Orion* vnto the scripture, will haue it to be the sword of *Saul*, afterwards called *Paul*, where-
with

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with he persecuted the members of Christ, which, after his conuersion was placed in heauen. In his left shoul- der, there is a verie bright starre, which in Latin is tear- med *Bellatrix*, the warriour, in the Feminine gender. I cannot finde the reason, except it bee this, that women borne vnder this cōstellation, shal haue mighty tongues. The reason of the Oxe hide that hee holdeth in his left hande, may be gathered out of the next constel- lation.

The third is *Fluvius*, the riuer, and comprehendeth 34 starres. It is called by some *Eridanus*, or *Padus*, and they say that it was placed in heauen in remembrance of *Phaeton*, who hauing set the whole worlde on fire, by reason of the misguiding of his father *Phæbus* his Cha- riot, was slaine by *Iupiter* with a thunderbolt, and tum- bling downe from heauen, fell into the riuer *Eridanus*, or *Padus*, which the Italians call *Po*. Others say that it is *Nilus*, and that this figure was placed in heauen, be- cause of the excellencie of that riuer, which by the Di- uines is called *Gihon*, and is one of the riuers of Paradise. Others call it *Flumen Orionis*, the flood of *Orion*, and say that it was placed there to betoken the offspring from whence *Orion* came: for the tale is thus reported of him.

Iupiter, *Neptune*, and *Mercurie*, traualing vpon earth in the likenesse of men, were requested by *Hyrcus* to take a poote lodging in his house for a night, they be- ing ouertaken with the euening, yeelded vnto his re- quest. *Hyrcus* made them good cheare, killing an Oxe for their better intertainment. The Gods seeing the good heart of the olde man, willed him to demaunde what he would in redompence of his so friendly cheare. *Hyrcus* and his wife being olde, requested the Gods to gratifie them with a sonne. They to fulfill this desire, cal- led for the hide of the Oxe that was slaine, and hauing receiued

received it, they put it into the earth, and made water therein all three together, and couering it, willed *Hyreus* within tenne moneths after to digge it out of the earth againe which he did, and founde therein a man-childe, whom hee called *Ourion*, *ab vrina*, of pisse, although afterwarde by leauing out the second letter, he was named *Orion*. At such time therefore as hee was placed in heauen, this floud was ioyned harde vnto his heeles, and the Oxe hide whereinto the Gods did pisse, was set in his left hand, in memoriall of his offspring.

The fourth is *Lepus*, the Hare, which consisteth of 12. starres. This constellation was placed in heauen, betweene the legges of *Orion*, to signifie the great delight in hunting, whereunto in his life time he was addicted. But others thinking it a friuolous thing to say, that so notable a fellow as *Orion*, would trouble himselfe with so small and timerous a beast as the Hare, they tell the tale in this manner.

In times past there was not an Hare to be founde in the Isle Leros: a certaine youth therefore of that Ilande, being very desirous of that kinde of beast, brought with him from another Countrey thereabout, an Hare great with young. Which when she had brought forth, they in time became so acceptable vnto the other Countreymen, that euery one almost desired to haue and keepe a Hare. By reason whereof, within a short space after, the number of them grewe to be so great, that the whole Island became full of Hares, so that their masters were not able to finde them meate: Whereupon the Hares breaking forth into their fieldes, deuoured their corne. Wherefore the Inhabitants being bitten with hunger, ioyned together with one consent, and (though with much a doe) destroyed the Hares.

Therefore placed this constellation in heauen, as well to expresse the exceeding fearefulnesse of the

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beast, as also to teach men this lesson, that there is nothing so much to bee desired in this life, but that at one time or other, it bringeth with it more greef then pleasure. Some say that it was placed in heauen at the request of *Ganymedes*, who was greatly delighted with hunting the Hare.

The fift is *Canis maior*, the greater dogge, which hath accounted in his constellation eightene starres. It is called *Sirius Canis*, because he causeth a mighty drought by reason of his heate. This is that constellation that giueth the name vnto the Canicular, or Dogge dayes, whose beginning and ende is not in all places all alike, but hath a difference according to the Countrey and time: As in the time of *Hippocrates* the Phisitian, who liued before the time of Christ, foure hundred yeares. The *Canicular* dayes began the 13. or 14. of Iulie. In the time of *Auicenna* the Spaniard, who liued in the yeare of our Lord 1100. the *Canicular* dayes began the 15. 16. or 17. of Iuly. In our Countrey they began about Saint *James* tide, but we vse to account them from the sixt of Iulie to the seuentene of August, which is the time wherein the Sunne beginneth to come neere vnto, and to departe from this constellation.

Nouidius will haue it referred vnto *Tobias* Dogge which may very well be, because hee hath a tayle; and *Tobias* Dogge had one, as a certaine good fellow sometimes concluded: because it is written that *Tobie* his dog fawnde vpon his master, therefore it is to be noted, saide hee, that he had a tayle. The Poets say that this is the Dogge whome *Iupiter* sette to keepe *Europa*, after that hee had stolne her away, and conueyed her into Crete, and for his good seruice was placed in heauen. Others say that it was one of *Orien* his dogges. There belong vnto this constellation eleuen starres vnfor-

The sixt is *Canis minor*, the lesser Dogge, which of the Greekes is called *Procyon*, of the Latines *Antecanis*, and conteineth but two starres. Some say that this also was one of *Orions* Dogges. Others rather affirme it to be *Mera*, the Dogge of *Erigone*, or rather of *Icarus* her father, of whom mention was made in the constellation of *Bootes*, and *Virgo*. This Dogge, for meere loue that he bare his master being slain, as is aforesaid, threw himselfe headlong into the riuer *Anygrus*, but was afterwards translated into the heauen with *Erigone*. Among the Poetes there is great dissention, which of the two should be the Dogge of *Erigone*, some saying one, and some another, and therefore they doe many times take the one for the other.

The seuenth is *Argo nauis*, the shippe *Argo*, which comprehendeth 41, starres. This is the shippe wherein *Iason* did fetch the golden fleece from *Colchis*, which was afterward placed in heauen as a *memorandū*, not onely of that great voyage, but also because, as some will haue it, it was the first shippe wherein any man sailed. The reason that they yeeld why this shippe is not made whole is, that thereby men might be put in minde not to despaire, albeit that their shippe in some parte miscarie now and then. Some auouch it to be the Arke of *Noe*. *Nouidius* sayth it is the shippe wherein the Apostles were when Christ appeared vnto them, walking on the Sea. In one of the Oares of this shippe, there is a great starre called *Canobus*, or *Canopus*, which the Arabians call *Shuel*, as it were, a Bonafire, because of the greatnes thereof. It is not seene in Italie, nor in any countrie on this side of Italie. Some say that *Canobus* the master of *Menelaus* his shippe, was transformed into this starre.

The eight is *Hydra*, the Hydre, which hath 25, starres, and two vnformed.

The ninth is *Crater*, the Cuppe, or standing peece,
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which hath seuen starres. Some say that this was the Cuppe wherein *Tagathon*, that is, the chiefe God, mingled the stuffe whereof he made the soules of men.

The tenth is *Cornus*, the Crowe, which hath seuen starres. These three constellations are to be ioyned together because they depend all vpon one historie, which is this: Vpon a time *Apollo* made a solemne feast to *Iupiter*, and wanting water to serue his turne, hee deliuered a Cuppe or standing peece to the Crowe (the birde wherein he chiefly delighted) and sent him to fetch water therein. The Crowe flying toward the riuer, espyed a figge tree, the fruit whereof was not yet ripe. Forgetting therefore the message whereon he was sent, he went to the figge tree, fell in hand with the figges, and abode there vntill they were ripe. In the end when he had fed his fill of them, & had satisfied his longing, he bethought himselfe at the last of his errand, and by reason of his long delay, fearing a checke, he caught vp a snake in his bill, brought it to *Apollo*, and tolde him that the snake would not let him fill the cuppe with water. *Apollo* seeing the impudencie of the bird, gaue him this gift, that as long as the figs were not ripe vpon the tree, so long he should neuer drinke, and for a memoriall of the filie excuse that he made, he placed both the Crow, the Cup, and the Snake in heauen. *Nonidius* will haue the Cuppe to be the Chalice, which, as the Papists say, the Angels shewed vnto Christ, in the Garden a little before his passion. The Crow, he representeth to that crowe which *Noah* sent out of the Arke, to see whether the waters were fallen from the face of the earth, or no.

The 11. is *Centaurus*, the Centaure, which comprehendeth 37. starres. Some say that this is *Typhon*: Others call him *Chiron*, the schoolemaister of those three excellent men, *Hercules*, *Achilles*, and *Æsculapins*. Hee taught *Æsculapins* physicke, vnto *Hercules* he read Astro-
nomic,

nomie, trained vp *Achilles* in Musicke, and for his vprightnesse of life, was turned into this constellation: yet *Virgile* calleth *Sagittarius* by the name of *Chiron*, as was said before. In the hinder feete of this constellation, those starres are set which are called the *Crossers*, appearing to the mariners as they saile towarde the South sea, in the forme of a Crosse, wherevpon they haue their name. The foure starres which are in the garnish of the Centaures speare, are accounted by *Ptolemy*, as a peculiar constellation, and are called by him *Thyrilochus*, which was a speare compassed about with Vine leaues: But they are called by *Copernicus*, and *Clavius*, and other Astronomers, The starres of his target. It shoulde seeme that they were deceiued by the olde translation of *Ptolemy*, wherein *scutum* is put for *Halsta*, that is, the Target for the Speare, as it is well noted by our Countreyman *R. Recorde*, in his Booke intituled the Castell of knowledge.

The 12. is *Lupus*, the Wolfe, or the beast which the Centaure holdeth in his hand, and conteineth 19 starres. The Poeticall reason is this: that *Chiron* the Centaure, being a iust man, was greatly giuen to the worship of the Gods: which thing that it might be notified vnto all posteritie, therefore placed they him by this beast which he seemeth to sticke, and to thrust through with his speare, as it were readie to kill it for a sacrifice.

The 13. is *Ara*, the Alter, which is also called *Lar*, or *Thuribulum*, that is, a Chimney with the fire, or a Censer. It consisteth of seuen starres, and is by some Poets affirmed to bee the Altar, whereon the Centaure was wont to offer vp his sacrifice. But others tell the tale thus: When as the great Giants called the *Titans*, labored as much as might be to pull Iupiter out of heauen, the Gods thought it good to lay their heades together, to aduise what was best to be done. Their conclusion was

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this, that they would all with one consent ioyne handes together, to keepe out such fellowes. And that this their league might be confirmed, and thoroughly ratified, they caused the *Cyclopes*, which were the workemen of *Vulcane*, to make them an Altar. About this Altar all the Gods assembled themselues, and there sware, that with one consent they would withstand their enemies. Afterwards hauing gotten the victorie, it pleased the to place this Altar in heauen, as a memoriall of their league, and a token of that good which vnitie doth breed.

The 14 is *Corona Austrina*, the South garland, which hath 13 stars. Some say that it is some trifling garland, which *Sagittarius* was wont to weare, but he cast it away from him in ieast, and therefore it was placed betweene his legges. Others call it the wheele of *Ixion*, whereupon he was tormeted for that great curtesie which he would haue offered vnto *Iuno*, thinking in deede to haue gotten vp her bellie. But *Iupiter* seeing the insolencie of the man, tumbled him out of heauen (where by the licence of the Gods he was sometimes admitted a guest) downe into hell, there to bee continually tormented vpon a wheele. The figure of which wheele was after wards placed in heauen, to teach men to take heede, howe they be so sawcie, to make such courteous profers vnto other folkes wiues. The Greekes call this constellation by the name of *Praniscus*, because of the figure thereof. For it representeth the palate or roofof the mouth, which they call *Praniscus*.

The 15. and last, is *Piscis Austrinus*, or *Notus*, the South fish which comprehendeth 11 starres, beside that which is in the mouth thereof, belonging to the water which runneth from *Aquarius*, and is called by the Arabians, *Formabant*. The reason why this Fish was placed in heauen is vncertaine: yet some affirme that the daughter of *Venus*, going into a water to wash her selfe, was sodainly

sodainly trāsformed into a fish, the which fish was after-
wardes translated into heauen. The vnformed starres
belonging vnto this constellation, are 6.

Thus haue I briefly runne ouer the Poeticall rea-
sons of the constellations: if there bee any thing nowe
that you stand in doubt of concernning them, or anie
other thing, I pray you speake, and I will satisfie your
minde.

Sch. I am satisfied concerning the poeticall reason
of the constellations: but mee thinketh there is yet one
thing in your Hemispheres whereof you haue made no
mention at all. For I see certaine prickes crossing each
Hemisphere, as in the North Hemisphere they beginne
at Cancer, on each side the head thereof, and passe by Au-
riga, and so by Perseus, and Cassiopeia, and from thence to
the Swanne, and are continued vnto the heade of Capri-
corne. In the South Hemisphere, they are ozatone
from the head of Capricorne, by the taile of Scorpio, and
the feete of Centaure, and from thence to Argo, the ship,
and so south vnto the head of Cancer: what meaning haue
they, and what is it that is contained betwene them?

Ma. It is that great white circle that is seene in the
heauen, which by the Greekes is called *Galaxia*, and by
the Latines *Lactea via*, or *Lacteus circulus*, and by vs ex-
pressing word for worde, it is called The milke way:
some in sporting manner doe call it Watling streete:
but why they call it so, I cannot tell, except it be in re-
gard of the narrownes that it seemeth to haue, or else in
respect of that great high way that lieth betwene Douer
and S. Albons, which is called by our men Watling street.

Sch. I pray you let mee heare somewhat touching
this circle: for I haue greatly desired to know both what
it is, where it is, and of what it is made.

Ma. Concerning this circle there are sundrie opini-
ons: For there is great difference among some writers
both

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both touching the place, matter, & efficient cause thereof. Others agree both in the place, and matter, but differ onely in the efficient cause. *Aristotle* dissenteth from all other, both Philosophers and Poets, in the place, in the matter, and in the cause of this circle: saying, that it is a Meteor ingendered in the aire, made of the vapours of the earth, drawen vp thither by the heate of the Sunne, and there set on fire. But his opinion is of all men confuted.

First, touching the place, it cannot bee in the ayre, for whatsoener is in the aire, is not seene by all men at all times to be vnder one and the same parte of heauen. If we see it in the South, they that are towards the West shall see it vnder the East side of the heauen, and they that are in the East, shall see it to the West warde: But this circle is of al men seene alwayes vnder the same part of the heauen, and to be ioyned with the same starres, therefore it cannot bee in the ayre.

Againe, for the matter, it cannot be made of that which *Aristotle* nameth, that is, the vapours of the earth, because of the long continuance of the thing, and that without any alteration. For it is not possible that any Meteor made of the vapours drawen vp from the water, or exhalations from the earth, should last so long, as may bee seene in the blazing starres, which though they haue continued verie long, namely fixeene monethes, some more, some lesse: yet at the length they haue vanished away, whereas this circle hath continued from the beginning vnto this day.

Besides, put case it were made of these exhalations, whence will they inferre the vniformitie thereof? The Comets doe alter diuersly, both in the fashion of their blazing, and also in their seuerall quantities, whereas in this circle, there is nothing, but the same part is alwayes of one forme, and of one bignesse. In the efficient

cient cause therefore hee muste needes erre: for if it bee neither in the Aire, nor made of the exhalations of the earth, it cannot bee caused by the Sunne, for the one is the place, the other the matter, wherein, and whereupon the Sunne sheweth his force.

All others beside *Aristotle* agree in the place, but differ in the efficient cause thereof, and they are either Philosophers, or Poets. Both these sorts of men say, that it is in the firmament, that is, in the eight Sphere: but they disagree in the cause thereof.

Ouid saith that it is the great causey, and the high way that leadeth to the palace of *Iupiter*, but he alleadgeth not the cause of the whitenesse: belike hee woulde haue vs imagine that it is made of white marble.

Others therefore alleadge these causes: *Iupiter* hauing begotten *Mercurie* on *Maia*, the daughter of *Atlas*, brought the childe when he was borne, to the breast of *Iuno* lying a sleepe. But *Iuno* awaking, threwe the childe out of her lappe, and let the milke runne out of her breastes in such abundance, that (spreading it selfe about the heauen,) it made that circle which we see.

Others say that it was not *Mercurie*, but *Hercules*, which was layde in the lappe of *Iuno*. For *Iupiter* knowing the great hatred that *Iuno* bare the babe, perswaded himselfe, that if it were possible to gette her to nourishe it, she coulde not but (as it were by nature) beare the childe good will. Hereupon *Hercules* was brought vnto her breastes as shee laye on sleepe. *Iuno* feeling him to drawe

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very harde, awoke sodainely out of her sleepe, threwe the childe out of her lappe, and let the milke runne downe the heauen, whereby it was stayned white in such sort as we see.

Others say that *Juno* did not let her milke runne out of her breastes, but that *Hercules* suckt them so earnestlie, that his mouth ranne ouer, and so this circle was made.

Others say that *Saturne* beeing desirous to depoure his children, his wife presented him with a stone wrapped in a cloute, in steade of his childe. This stone stucke so faste in *Saturne* his throate; as hee would haue swallowed it, that without doubt hee had therewithall beene choaked, had hee not beene relieved by his wife, who by pressing the milke out of her breastes, saued his life. The milke that missed his mouth (whereof you must suppose some sufficient quantitie) fell on the heauen, and running along made this circle. And thus you heare the opinion of the Poets, who, although in some circumstance they differ, yet doe they iumpe all in this, that it is in the firmament, howsoeuer the cause that they alledge, be very frivolous.

The Philosophers, (and chiefly *Democritus*) affirme the cause of the thing to be the exceeding great number of starres in that parte of the heauen, whose beames meeting together so confusedly, and not comming distinctly vnto the eye, causeth vs to imagine such a whitenes as is seene. But the best opinion is this, that this milke-way is a parte of the firmament, neither so thinne as the other partes thereof, nor yet so thicke as the starres themselves. If it were as thinne as the other parts of the heauens beside

beside the starres, then coulde it not retaine the light, but the light would passe through it, and not be seene: if it were as thick as the starres, then would the light be so doubled in it, that it would glister and shine as the starres themselves doe: but being neither so thin as the one, nor so thick as the other, it becometh of that whitenesse which we see.

Scho. What vse hath this circle in the heauen?

Ma. First it limiterh the Tropicall pointes: for the heades of *Capricorne* and *Cancer* are within it. Secondly, it is vnto vs an argument to proue, that the starres mooue not in their spheres, as fishes in the sea, or as birdes in the ayre: For if that were so, it is most certaine that the starres which are in this circle at this present, woulde by and by shift the same, and passe out of it into some other place of heauen, which neuer falleth out to be so: but common experience witnesseth this, that these starres which are nowe in heauen, haue beene in it alwayes heere-tofore, as wee shall see them still continue in the same.

Scho. Let vs come nowe to the last vpsotte, which is by these Hemispheres to knowe the starres of heauen.

Ma. Haue you euer heard howe many wayes the starres may generally be knowne?

Scho. I remember in that little treatise of the vse of the Celestiall Globe, which you read the last yeare, there are certaine propositions concerning such a matter, namely the 37. and the 40. proposition: is that it which you meane?

Ma. No: For those propositions belong vnto

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some particular Horizon : besides them, there are sixe wayes, whereby we may knowe the starres, and remember them the better when they are knowne.

And first, by their magnitude : For as you see, one starre differeth from another in greatnesse : some are of the first magnitude, and are verie great : others are of the second magnitude, and are in deede great, but not so great as the first : those of the third magnitude are meane : those of the fourth magnitude are little : those of the fift are lesser : those of the sixt are verie small : All these severall magnitudes are in my Hemispheres (as I sayde before) expressed by sundrie figures.

Secondly, the starres are knowne by their colour : Some are white : some pale : some of the colour of Boxe : some of a leaden colour : some shine like golde : some are redde. These severall colours cannot bee expressed in the print, and therefore this may serve your memorie : but in mine Hemispheres it is not to be regarded.

Thirdly, the starres are knowne by their brightnesse, or shining : because some shine verie much : some shine but meanelly : some a little : others as it were, nothing all, but are like a cloude, and are therefore called *Nebulosa*.

Fourthly, the starres are knowne by their forme or figure, and manner of situation : for some make a triangle : some, a quadrangle : some, a right line : as those three starres in *Orions Girdle*, which we call commonlye, our Ladies Wande, or the Golden Yarde : some stande on a cluster, as the *Pleiades*, which wee call the seven starres : and some in a circle, as the Crowne of *Ariadne*. This being applied vn-
to

to my Hemispheres, will teach you how to knowe the starres.

Fiftly, the starres are knowne by their twinkling, as the little Dogge which twinckleth verie much: the Lions heart twinckleth verie seldome: the foote and shoulder of *Orion* twinckleth verie meanelly.

Last of all, the starres are knowne by their place in the Horizon of the Meridian, or by their passing by the Zenith. When by these meanes seuerally, or ioyntly together, you shall knowe any of the starres of heauen, seeke out that starre in one of the Hemispheres. Then set the Hemisphere so that the starre which you haue founde out therein, may bee directly vnder that which is in the heauen. Then turne your backe (for so I iudge it most conuenient, though otherwise it be not greatly materiall) vnto the starre which is in the heauen, and your face vnto the starre in the Hemisphere, and by a little obseruation, partlie of the magnitude, partlie of the situation of the other starres that are about it, you shall in a short time come to the knowledge of the rest.

Scho. But is there not a speciall regard to be had to the holding of the Hemispheres?

Ma. This regarde is to be had, that the printed side of the North Hemisphere lie vpwarde towarde the Zeinth, and the white side downwarde: but let the printed side of the South Hemisphere lie downwarde, and the white side vpwarde: so that it were not amisse to lay the white side of the one, to the white side of the other: for by that meanes, you shall see the better, howe the twelue constellations of the Zodiacke are parted asunder by the E-

John Windet &c.

There you may see to be added concerning
the matter.

Mr. N. But if you doubt of any thing here-
after, I will bee ready to further your studie in
what I can. And if it bee your happe to bee at my
Lecture newe and then, when occasion shall serue
to read this booke, it may bee I may shewe
you some odd thing else, which you
have not heard of yet. In
the meane time I shall
say farewell.

FINIS.

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